



[Home](#) [About](#) [Calendar](#) [Courses](#) [Research Teams](#) [People](#) [Resources](#) [Summer Photos](#)

## Ilan Buzzetti



Q Search for:

### Blogs

- [Ahmed Abdirahman](#)
- [Ilan Buzzetti](#)
- [Victoria Green](#)
- [AJ Hanus](#)
- [Aidan Kidder-Wolff](#)
- [Gabriel Kulp](#)
- [Leilanie Morales Rivera](#)
- [Teandre Roberts](#)
- [Inshira Seshie](#)
- [Stephan Terry](#)
- [Kira Thomas](#)
- [Mary Truong](#)

### Courses

- [C++](#)
- [Craft of Research](#)
- [Deeper Dives](#)
- [Intro to HCI](#)
- [Luncheon Lectures](#)
- [Maya](#)
- [Solidworks](#)
- [Unity](#)

### Recent Posts

- [Sadness Abounds](#)
- [August 3rd \(Fin\)](#)
- [Time Crunch](#)
- [Val Nehls' Hot Wheels](#)
- [August 2nd \(Penultimate\)](#)
- [Welp](#)
- [Short Post](#)
- [Week 10: Finishing Up](#)
- [Teandre's Post: Blog Catching Up](#)
- [Weekend 9: A Quick Family Visit](#)
- [Poster Arrived](#)
- [Last Monday](#)
- [OUR POSTER!](#)
- [July 27th – 30th \(Praxis\)](#)
- [The benefit of doing grad school](#)

### Recent Comments

- [buzzetti](#) on [To go where no one has gone before](#)
- [buzzetti](#) on [To go where no one has gone before](#)
- [sterry](#) on [The Atrocity that is an Ames Haircut](#)
- [buzzetti](#) on [The Atrocity that is an Ames Haircut](#)
- [buzzetti](#) on [The Atrocity that is an Ames Haircut](#)

### Meta

- [Log in](#)

### Funded by NSF



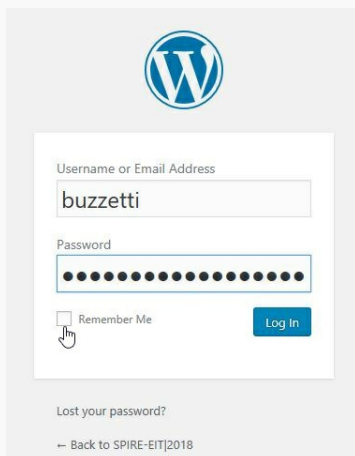
NSF Grant 1757900

[Previous Years of SPIRE-EIT](#)

## Sadness Abounds

📅 August 3, 2018 👤 [buzzetti](#)

I finally feel the end. I have returned most things I must return before the conclusion of this REU. Now I sit in Howe Hall alone. An interesting feeling... Logging in prompted me with a kind option just now.



📁 [REU|2018](#) 🗨️ [Leave a reply](#)

## Time Crunch

📅 August 3, 2018 👤 [buzzetti](#)

Before this REU I had already planned on getting an MS. Thanks to inspirational talks from Eliot and crew I have been more and more interested in the idea of pursuing a PhD. However I am near the end of my career as an undergraduate student, and soon I will have to sell the image of myself to professors and programs alike. I am not nearly as accomplished as I should be at this stage, if one is to judge themselves by their peers.

And so I hear the every tick of the clock.

And I have been since the beginning of the summer. I am racing against time to check off as many items from a list of skills and accomplishments I should accrue by the time I have exited or decidedly immersed myself within academia. Which means I also have a similar list of items I am racing to check off before I acquire my MS, so that I have better options regarding pursuing a PhD. Which means I also have a similar list of items I am racing to check off before I start my MS, so that I have better options during my early graduate career, and more time to focus on bigger items during it. Which means I also have a similar list of items I am racing to check off before the beginning of the upcoming

Fall semester, so that I might be prepared for the grueling semester ahead and be in a position to start building relationships with key professors. Which means I also have a similar list of items I am racing to check off before the end of this REU program, so that I might...

...

Things I have done this summer that I consider significant in my development (tangentially / directly):


- Found a hobby
- Read a lot (pseudo-leisure)
- Used jupyter notebooks
- Used Keras
- Followed tutorials actively (opposed to passively)
- Read properly made documentation (Keras)
- Read almost mediocly made documentation
- Read and learned from GitHub code
- Cannibalized code from previous projects for new purposes
- Biked a lot
- Cooked a lot
- Maintained a sleep and exercise schedule (mostly)
- Actively took on responsibility and spoke up (asked questions, shared ideas)
- Presented research
- Organized a small hackathon

Tick tock tick tock

Tick tock tick tock

Tick tock tick tock

Tick tock tick tock

 [REU|2018](#)  [Leave a reply](#)

## Val Nehls' Hot Wheels

 [August 3, 2018](#)  [buzzetti](#)

I went over to Val's shop again today, must've been the fourth or fifth time. I left around 9:40 AM. I just recently got back and it is now 5:10 PM. I jumped at the opportunity to accompany her on a trip down to the bike collective at Des Moines to see what it is all about and I got way more than I had bargained for.

We did some bike stuff at the collective. I learned how to take apart a bike from start to finish. That part was definitely a fun learning experience and worth it alone. The main event was all the time we spent after. She took me on a long tour of Des Moines. Theme: Bikes and Services/Charities for the poor and homeless.

A latent realization I have had in my time here is the importance I place on carrying out my civic duty. I feel duty bound to help the community – make some sort of positive impact on the well being of those who had less fortunate starting conditions than I have. In the ride back from Des Moines I had some time to think about this. The current dilemma I face is envisioning a lifestyle in which I can effectively pursue intellectual exercise, support myself financially, and enrich the lives of others.

-July 7, 2018

Went to UBFM Des Moines with Val the other day. I don't remember what exactly I wrote up there, but the feeling I attempted to describe still persists. Doing my part to give back helps me find fulfillment in life. Additionally there is a pleasantly hopeful feeling that I get when I witness a mass of people contributing their time and resources to a selfless cause. Good vibes and whatnot. A good place to be.

I hope to join Val next Thursday as well. It'll require a fast mental switch from serious symposium setting to benevolent biking behavior. That isn't a complaint, nor is it a statement suggesting difficulty.

-July 27, 2018

Rode with UBFM again last night. Went on the green route this time (last time purple route). Different route culture – Kyle and crew knew pretty well who to expect and where to look (certain houses, certain cars in parking lots). I finally took the initiative to approach someone that looked in want but too shy to approach. A kid on a bicycle. We sent him away with 3 PB&J's. Felt good.

Another learning experience, comparatively less meaningful than the practicing of charity, is just how much ground I can cover biking without exerting too hard. Whenever I bike alone I tend towards a fast and effortful pace. Biking with a group forces me into a pace others (including non-cycling enthusiasts) may maintain. And yet at the end of the day we had covered 7.05 miles in 2.66 hours including stops. Now I know I can comfortably bike places in reasonable amounts of time.

edit: Saw a homeless man on his way to an interview. That inspired hope. I didn't even think he might be telling an untruth until I later felt some skepticism from the regulars about this. Perhaps I am yet naïve.

-August 3, 2018

 [REU|2018](#)  [Leave a reply](#)

## On Wasting Time

 [July 31, 2018](#)  [buzzetti](#)

Describing previous habits or actions as a waste of time is unproductive. The time was spent with purpose. It is better to reflect on this purpose and if a negative feeling regarding the usage persists, reflect on the causes leading to the misuse.

 [REU|2018](#)  [Leave a reply](#)

## Step Up Sterry

### Comments

*The Atrocity that is an Ames Haircut* — 13 Comments



iseshie on July 19, 2018 at 11:05 am said:

Show pictures of your haircut or it's fake.  
Reply ↓

 ahmeda2 on July 19, 2018 at 1:17 pm said:

pics or it didn't happen

Reply ↓

 vgreen1 on July 19, 2018 at 1:23 pm said:

Proof

Reply ↓

 teandrer on July 19, 2018 at 1:24 pm said:

Pics or it didn't happen

Reply ↓

 mtruong on July 19, 2018 at 1:24 pm said:


Send pics

Reply ↓

 kirat on July 19, 2018 at 1:28 pm said:

"I HaVe A bAd HairCuT"..... pics or it didn't happen

Reply ↓

 buzzetti on July 19, 2018 at 1:28 pm said:

Evidence for the evidence locker

Reply ↓

 sterry on July 19, 2018 at 1:31 pm said:

13 comments and I'll post proof

Reply ↓

[The AtRoCiTy ThAt Is An AmEs HairCuT](#)

July 27, 2018 by [buzzetti](#) Posted in [REU|2018](#) Reply

## Cash Flow

 July 25, 2018  [buzzetti](#)

I've started rereading the graph portion of my algorithms textbook. The last chapter in the section goes over flow models and some basic algorithms for them. I wonder what kind of interesting things one can model using a cash-flow graph. And what I might be able to model with limited experience. Perhaps a small scale economy? Perhaps cash could represent 'attention' that one pays with, and the graph could represent a mind with stimuli and desires competing for the attention? I've skimmed over the section once a year or so ago, so I don't yet know well what flow networks have been used for. Such ignorance is simultaneously good and bad in my opinion. It can unbar the imagination, which is good. It can lead to fruitless efforts ultimately finding nought but frustration, which is bad.

Anyways, I bring this up because I went to pick up the paychecks during lunch. With this new influx of money I'm almost out of the uncomfortable red zone of low stored cash. I have just run a rough estimate of what I expect to spend once I am employed. Turns out for my plans I need a yearly minimum of 56k after taxes and social security and 401K deductions. This didn't take into account leisure activities. However I am lucky in that many activities I consider leisurely do not require extra expenditures. Perhaps I should include money for extra projects, which I have previously participated in yearly, and which I know require significant amounts of money. Projects like replacing insulation, solar panel investment, home renovations, gardening, etc.

So let's bump that minimum *desired* discretionary spending post deductions to 60k. Professors in the [U.S.](#) [general](#) is doable. [Data Scientists](#) and [ML Engineers](#) do pretty well as well. AI researcher maybe, couldn't locate information on it. Also the job title is a tad meaningless to me right now, so clearly I'm not yet qualified.

Ultimately the goal is to 'retire' and be a professor or a [high school teacher](#). The latter seems doable, but is too far in the future to currently consider the data and economic context valid.

 [REU|2018](#)  [2 Replies](#)

## Post ID: 2370



 July 24, 2018  [buzzetti](#)

Woke up wanting to skip the gym. Not a good sign. Instead I went and took it slightly easy – going for volume on squats instead of intensity, and skipping most of the auxiliary exercises. I think I kept my bench-press form better than usual today, however.

Got back to the office hoping to see some results from running the ML model overnight. It crashed on epoch 25 out of 50. Something about the GPU having run out of memory. Strange considering all batches and epochs are the same size. I started it up again immediately, and strangely with the new initialization of weights it performs twice as well as the previous model. Some might think that this is a good thing, but it is overshadowed by the stark lack of progress. The model is showing no improvement in accuracy – it simply fluctuates within a range. I think if we had larger batches it would learn better. However the size of each datum is too large to make batches larger than a single datum. If we had engineered data we would be able to make larger batches, train faster, and *possibly* get better results.

I wasn't in the zone today. Not like yesterday at least. I did manage to get the ML data sifting process up and running though. It's my first time making an interactive tool of significance. I made the primary interactive keys j, i, o, and space. This allows a person to lounge with their hand at rest on the keyboard while being productive. It isn't very forgiving of mistakes however, and so an unintentional action could lead to mislabeled data. I hope this dataset turns out useful, but it may be a false hope. The dataset might still be small. So far I've trained the cursor classifier on untold quantities – easily in the millions – of constructed cursor pics. Now the cursor pics will not be constructed – there will be at most one (pre augmentation, which is of limited use) per image. And there are at most 100k images. And I have at most patience to sift through 300 (estimate). And not every image has a cursor to provide the data with a positive sample. And it will not have an equal distribution of cursor types (pointer, finger pointer, etc.).

But it will better represent the data we have, seeing it is extracted directly from it.

 [REU|2018](#)  [Leave a reply](#)

## Catch

 July 23, 2018  [buzzetti](#)

The weekend was too short.

Saturday – spent a good chunk of the morning and early afternoon helping Val move bikes and clean up. Spent the rest of the day relaxing and shopping.

Sunday – HACKATHON DAY – spent most of my time tinkering with electron basics and trying to wrap my head around the overall flow of execution of the program I had in mind. It was tiring and without a tangible product to show for it. Fortunately T, Vicky, Gabriel, AJ, Stephan, Inshira, and Mary showed up to keep me company. Being a noob to the corporate reimbursement scheme I tipped the pizza delivery man in cash and didn't ask for the customer receipt. Sad, but paying 10\$ for such a lesson is not too bad.

~~~~

Today – Went on my Monday shopping run this morning. Didn't need so much from Fareway – got some broccoli, two more pints of blueberries, and a few sweet potatoes. I already have sweet potatoes enough but I've taken a liking to them. They are simple and sweet – and I don't have many sweet things in my diet nowadays. Then I cleared out the Freddy convenience store of their eggs again, and for the first time ever bought bacon there. Figured I might as well seeing as I have more than enough ISU specific cash to buy next week's eggs.

Now I'm going to try to get some tensorflow-gpu running on the Alienware™ laptop we've been provided. Barring that I'll go back to the foveated-crop approach and see if doing that preprocessing leads to any better training times.

Getting the gpu working was surprisingly easy thanks to this to-the-point [medium article](#) and some assumption testing (I just told it to install tensorflow-gpu and keras along with the creation of the python 2.7 environment and it worked. I saw CuDNN being installed in the creation log.) It cut down the time for 1 epoch from 1:45:37-ish to 0:32:15-ish. With that working in the background I figure I might as well test the cursor classifier and see whether it can locate the cursor in screens. There's time a plenty to work on the paper and poster. There's not time a plenty to get results.

The cursor classifier works poorly. On an image with an easily human-findable cursor the algorithm located it with its 15th guess. But it wasn't the 90th guess which is good. I can use this model to develop a new dataset based off of the actual dataset that should hopefully fit it better. This segment of the project is perhaps more interesting than the actual TIMELI project. Perhaps because I have total creative ownership of it and have no oversight nor pressures as it has been long since it has seen the spotlight. Yet I have hopes that it may be of use after I have left. It is dormant. Perhaps it is potent too.

It has been a long short day. 4:00 pm has arrived rather quickly. I fear I am now blathering.

Good.

 [REUJ2018](#)  [Leave a reply](#)

---

## Topological Tour

 [July 20, 2018](#)  [buzzetti](#)

Given DAG  $D=(V,E)$  and weighted directed graph  $G=(V', E', c)$ ;  $V$  being a subset of  $V'$ ,  $c: E' \rightarrow \text{Real Numbers}$  (that is,  $c$  is the weight function)

Goal: Find the shortest path in  $G$  that visits all nodes in  $V$  in a topological ordering of  $D$ . Nodes can be revisited of course, but they only count for the topological constraint if they are topologically valid when they are visited.

Aidan and I have already given a simple counterexample to the obvious greedy strategy of : Visit the next closest topologically valid node.

Thoughts anyone?

 [REUJ2018](#)  [1 Reply](#)



---

## Bibliophagy

 [July 18, 2018](#)  [buzzetti](#)

Books I've read since the start of this summer:

1. [Snow Crash](#) – Neal Stephenson  
Sci-fi mystery -> adventure, bringing team together. Would not recommend to anyone that doesn't like sci-fi for the sake of sci-fi itself. It is a generic mystery-adventure as far as I'm concerned. The most concept that stuck with me most from this book is the idea of society being split into franchised city-states. A fun idea to toy with, and a core part of the novel, but not good enough to warrant a read by someone with limited time and no investment in the genre.
2. [The Elegance of the Hedgehog](#) – Muriel Barbery  
Slice of life series – journal entries of two fictional characters. My friend that recommended this book did not like the ending, this made me worried that it would be a truly dissatisfying ending. I happened to quite like the conclusion though, it seemed fitting. Besides this the book is frustrating. Both characters are snobby intellectuals.
3. [Daemon](#) – Daniel Suarez  
Erratic narrative jumping – mystery/suspense adventure. I have noticed it typical of Daniel Suarez to wait several chapters before giving any indication of which characters will be important for the rest of the book. The fact that they have names and personalities are no indication of whether or not they'll be sticking around. In [Daemon](#) he keeps you guessing throughout the whole book. Definitely not a book for someone looking for a straightforward narrative with only one or two protagonists.
4. [Anathem](#) – Neal Stephenson  
Sci-fi mystery -> adventure ; sci-fi exposition. GREAT story, fun ideas. Definitely worth a read. It seems with this book even more so than the other sci-fi books that the target audience (the primary appeal of the book) changes often. It goes from sci-fi world exposition to adventure to thought experiments and Dialogs and political intrigue. I enjoy all these things so I was sad when I finished the 900-somethingth page and it was time to move on to the next book.
5. [A Mind For Numbers](#) – Barbara Oakley  
Self-help with references to plenty of supporting scientific literature. Teaches best learning methods and anti-procrastination h4x. Would recommend for anyone that wants to do more than simply pass a class.
6. [Kill Decision](#) – Daniel Suarez  
(mild) Sci-fi adventure. Decent and more straightforward than [Daemon](#). Recommended for people that dislike drone technology.
7. [Phantom of the Opera](#) – Gaston Leroux  
Drama – almost boring. To be fair, however, I did skip the foreword and afterword, which if like those of the [Handmaid's Tale](#) add quite a bit to the tale. However I doubt this. Not much besides to say about this book. My main motivation for reading it was to understand what the Phantom of the Opera was. Now I know.
8. [Robinson Crusoe](#) – Daniel Defoe  
Fictional autobiography. Robinson Crusoe is a completely fictional character. Don't be fooled. I have not actually finished reading this, but seeing as I don't think I'll finish it before the revocation of my blogging privileges I am including this as my last entry. I started reading [Robinson Crusoe](#) for the same reason as I read [Phantom of the Opera](#). It's alright. Some parts are more interesting than others. Unfortunately, these days I am too excited to read such dry things as this.

 [REUJ2018](#)  [Leave a reply](#)

---

## A Scripted Sequence

 [July 17, 2018](#)  [buzzetti](#)

Today, for the first time ever, I wrote a python script to train and save several different CNN models while I go do other things. I hoped to see 4 or so models ready to be evaluated by the time I got out of the luncheon. I was met with a simple runtime error that I didn't catch before running the code and going afk. I blame this mostly on the Law of Coding, but also on python being a dynamically typed language. Sometimes dynamic typing really gets on my nerves. Other times it fixes the headache of establishing types in short scripts. I quickly resolved the few problems I'd accumulated copy-pasting my code and making changes without getting everything in a consistent state and making spelling mistakes, and now it is running.

Anyways, this is a big deal for me. So, if I have nothing else to show for the summer (unlikely), at least I can say that I understand Keras and python well enough to work on future projects. I have acquired the foundations.

 REUJ2018  [Leave a reply](#)

---

## More Music Vids for Stephen

 July 17, 2018  buzzetti

Ran into Cole at lunch the other day, talked about the previous batch of music videos. He told me more about what these music videos are meant for. Stephen plays them right before the beginning of class when the students are supposed to turn in there homework. As such they are heard when under a time crunch. The videos aren't played on screen. Stephen prefers music with lyrics, and not heavy metal. Obviously the no-relationship-matter constraint still holds.

Also Cole is tasked with listening and screening these.

cont.

[Exxus](#)  
[Pools](#)

[The Riddle \(Five for Fighting\)](#)

[Hakuna Matata](#)  
[I Just Can't Wait To Be King](#)  
[I'll Make A Man Out Of You](#)  
[Zero to Hero](#)

[Heffalumps And Woozles \(Cousins of the Dax\)](#)

[Spice Up Your Life \(Cover better than original\)](#)

[Morena](#)

[Pantheon](#)

 REUJ2018  [Leave a reply](#)

---

## Try

 July 16, 2018  buzzetti

Got an email from Dr. Gilbert today extolling the virtues of keeping blogs. I must agree that blogs, and all records really, are helpful when you want to look back on a time period. It almost doesn't matter what the record captures – even the mundanities of life can be valuable to remember. And so I will elaborate a little bit more about the mundanities.

Last Friday I made an attempt at slow-cooked Jambalaya. It came out salty and dry. I had to scramble over to Freddy during lunch to get the cooking process started.

Saturday I spent the day looking at code. I dedicated the early parts of the morning to following an [Electron tutorial](#), once satisfied I moved on to continue the tango with Keras. I posted a question to stack overflow and fairly quickly had someone post the helpful comment that solved my issue. Turns out I was treating an array of a single element as the element itself instead of extracting the element. What a silly mistake. Then I lost myself in the composition of [Don Juan Triumphant](#).

Sunday was another gym day, so I did that after another early morning productivity session. Post gym I was mildly physically tired and wanting to get back to the daily program, but I had got my work clothes on and went to help Val some more. And I am glad for it. It is always nice to spend a few hours working alongside Val, and this time Mary was there to add to the merriment. Spent most of the time putting tires and tubes on rims. Mary and I helped ourselves to some of the remaining mulberries after a job well done.

—

Finally got my behind in gear today – I made a chicken liver dish. I've been meaning to try it since [my initial food post](#). I think I should've fried it for a longer period of time or on higher heat. It came out with a mushy sticky consistency. I think that's normal however, so I will eat it and do my best to enjoy it.

 REUJ2018  [Leave a reply](#)

---

## Progress

 July 12, 2018  buzzetti

I benched a new rep today. Rep 5 of set 3. Hadn't been able to do it up until now (with my current weight and form). Feels good. Perhaps my routine of working out, stuffing protein down my gullet, and sleeping in a semi-timeli manner is finally paying off. Also I've started looking into programming project setup optimization and project management tools for my side project – something I always loathed the thought of. I can definitively say that I have transformed over the past few weeks.

 REUJ2018  [1 Reply](#)

---

## Don Juan Triumphant

 July 9, 2018  buzzetti

I have been enraptured by a new hobby of late to the point that it has been difficult to sleep. This weekend I was cordially reminded of the feeling of being kept awake at night by echoes of ideas commandeering my mind. Of having my thoughts rendered slaves of an incorporeal taskmaster, driving them towards a beauteous structure. In these instances of unbidden passion it is not clear whether the unbidden song is that of the sinister siren or the benevolent muse.

The hobby of which I write is writing programs that will act autonomously in a virtual environment. However this environment happens to be one which is shared by humans, and already rife with a competition between these autonomous agents and humans for the limited resources.

Put simply: I have started scripting bots (for a game). Because this is on the border of unethical I will refrain from stating exactly which game it is for.

My first foray into the scene involved watching a bunch of tutorials – my normal behavior when my curiosity is piqued. However I resolved to not let this pass as a fleeting fancy but turn it into a hobby. I then read and re-read poorly commented GitHub code of a simple but interesting example. It wasn't a sequential script that any ordinary high schooler can write, but one that was split into modules and had a decision structure defined by the class hierarchy and encapsulation (rather than a giant World Tree of ifs and elses or a state machine). A day later I resolved to not let inaction get the better of me (again) and decided to go through the effort of installing the requisite software and getting the setup to work. I then joined the online community through the forums and discord server and became quite active in my turn (as active as a day of involvement can be) helping those less experienced in programming than I.

The first endeavor endowed me by my muse was replicating the decision architecture I came across on the GitHub. Simply using the architecture already in place wouldn't do. I would be nowhere near understanding it unless I designed it from the ground up and understood its ins and outs. This is not always feasible, and I know all too well that my passions come to a screeching halt because I bite off more than I can chew, but in this situation I recognized with certainty the feasibility of the task. But, because simple, I added a few twists and made a few modifications to make it my own. The basic concept is outlined thusly:

Decision Trees manage the execution of high level tasks. Each task is recursively broken down into subtasks handled by subtrees. These trees are *tentatively explored* in a *tentatively greedy, tentatively stateful* Depth First manner (the former is inherent in the idea of the Decision Tree, the latter are implementation decisions). To enter a subtree the root node of the tree must be validated according to some defined precondition. To exit a subtree the root node must be re-reached (after *tentative* exploration of subtrees) and the defined postcondition must be satisfied.

Everything, including the High-Level managing Decision Trees, are subclasses of the Node type. This allows everything to be considered a task through polymorphism and enables it to be reused in another task.

The more specific abstract classes that are to be extended are:

1. Task Tree
2. Logic Node
3. Execution Node (May be renamed to Action Node)

And their intended responsibilities:

1. Task Tree  
Starting point of a task tree. Provides a starting point for task exploration and manage the exploration of the tree/subtrees by maintaining the trace of current execution
2. Logic Node  
Inner node in a Task Tree. Provides a way to root other trees together to turn them into subtrees dependent on the same pre and post condition. Should not be used for actuation.
3. Execution Node  
Leaf node in a Task Tree. Responsible for actuation of the decision making agent.

More on tree traversal – the default:

1. Tree instantiated – the root node of the tree is pushed onto the trace stack.
2. Tree execution step:
  - \_\_\_\_ 2.1. If the node on the top of the stack meets its invalidate (post) condition pop it off the stack, repeat until a node is not popped. If stack is empty the task is completely done.
  - \_\_\_\_ 2.2. Execute the node on the top of the stack
3. Logic Node execution step:
  - \_\_\_\_ 3.1. Iterate through subtree roots checking for node validity. If node is valid add it onto the calling tree's trace stack then execute it. If no subtree nodes are valid do nothing.
4. Execute Node execution step: (Why I think it might be better called Action Node)
  - \_\_\_\_ 4.1. Execute some action

My addition to what I had initially seen is the state system (storing a trace of execution) and the invalidation / postcondition check. This is but the tip of the iceberg of what has kept me up these past few nights. An iceberg that provides the perfect medium for a grand ice sculpture. However, whereas ice sculpting is a subtractive process, coding is an additive process.

This is enough for now. I am approaching 1000 words, and maybe I'll reach it if I come back to edit this post, expanding on the fine differences between subtractive and additive processes.

 [REUJ2018](#)  [Leave a reply](#)

---

## No Taxation Without Representation

 [July 5, 2018](#)  [buzzetti](#)

Yesterday was July 4th, a day important to U.S. Americans in the same sense as Thanksgiving – it is a reason to celebrate. And celebrate we did. A grill-out was had right next to our apartment building with everyone cooperating to make it happen on short notice. Many thanks to Leila, without her organization and coordination of the group it would not have worked.

Today we 'have the day off' but really with the mid-way presentation tomorrow lurking in the background it is difficult to take a break. Caveat: they haven't emphasized nor explained the presentations, we wouldn't know of them had the website not borne mention of it. In lieu of this ominous shadow I have made an exodus to the lab. It is a good place to work when it is quiet. Following is a short description of the day

Current focus: pumping out a great blog post.

Previous focus: troubleshooting a Keras example, learning about Keras Sequential, Model, and Layers

Future focus: work on the TRB draft

 [REUJ2018](#)  [Leave a reply](#)

---

## Blogging

 [July 2, 2018](#)  [buzzetti](#)

My blogging has been lacking. I have several drafts started, but none of them are publish worthy. Articulating ideas is hard. But it is a good exercise. I think the blogging task is a good idea. James W. Pennebaker, a Psychology professor at U.T. Austin, has done a bunch of work on the effects of writing. Among other things it can boost the immune system and help people recover from traumatic events.

But not all writing is created equal. I forget the particulars but writing about things logically – in a cause-effect relationship way – is superior to descriptive writing.

Examining writing can also lead to other fun insights, like who in a conversation holds the dominant position, and which poet is likely to commit suicide.

If interested I recommend his book [The Secret Life of Pronouns](#).

 [REUJ2018](#)  [Leave a reply](#)

## HCIdeas

June 28, 2018 buzzetti

VR – smartphone asymm games  
Intent predixn (using ML) (incorporated w/in creative process – blog j sent me)  
Live processed camera feed for AR

The screenshot shows a Medium post titled "HCIdeas" by buzzetti, dated June 28, 2018. The post content is: "VR - smartphone asymm games", "Intent predixn (using ML) (incorporated w/in creative process - blog j sent me)", and "Live processed camera feed for AR". The word count is 22. The post was last edited on June 14, 2018 at 2:11 pm.

Wouldn't have ever posted this but I just gotta say; it feels good when someone repeats the idea you pitched a few weeks earlier.

The screenshot shows a Medium post titled "TIMELI HCIdeas" by buzzetti, dated June 1, 2018. The post content includes a list of three ideas: 1. Retina tracking [& state context] for intent prediction (maybe not useful, would have to think more about how correct intent prediction could help (what it would do/enabled to be done faster) and how it could hurt); 2. Moving traffic incident autodetection confidence requirement for notifying TIMs based on current workload (ex. if TIM busy require 90% confidence that detected event is indeed an incident, if not busy at all then notify on any event detected with probability greater than 50%); 3. Custom camera groups with smart total ordering to allow TIMs to scroll through several camera feeds effectively (ex. drag & drop a square along a section of east-west road, get all cameras and order them by easternmost location). The word count is 113. The post was last edited on June 1, 2018 at 7:00 am.

And then continues pontificating the same examples, caveats, and edge cases already considered during the initial pitch.

Feels real good.

REUJ2018 Leave a reply

## Nightmares

June 28, 2018 buzzetti

I woke up in cold sweat this morning (colloquially 'last night'). I don't have nightmares, because even when my dreams are associated with negative affective states I still appreciate the intensity of the feeling. It is an interesting experience.

Or so I used to say.

A little backstory – last semester I started signing up for graduate level Computer Science courses for fall 2018. I use ratemyprofessor to choose which courses to take, because I have heard quite frequently that even if you take the right class you do not want to take it with the wrong professor. I chose a section lead by a well rated professor. Weeks after I reviewed my schedule and noticed the professor for the section had been changed to one known for being the most difficult. If memory serves he's the professor that PhD students have to take because he offers the most rigorous course on algorithms. At first I despaired but then I realize it was a happy un-choice thrust upon me by the universe.

My nightmare began with the class. The course's professor had changed again. But this time rather than being an even more difficult professor it was one of the easiest professors I had ever had (in real life). I had learned next to nothing new by the time I took the first test. It was awful. I then resolved to sit in on another professor's class, any professor. In a straightforward twist the first class I entered was that of my real-life-professor-to-be. For some reason, although it was a few weeks in and I had already taken a test in the other algorithms class, this was the first class of the semester this professor was conducting. In common fashion some paperwork was handed out that the students were expected to fill and return during class. But I was not officially part of the class, and I assumed the professor wouldn't take kindly to that. This put me in a rather difficult position. Doubly difficult because I had sat in the front of the class in order to hear and see better, and absconding would be disruptive and embarrassing. It was a terrible social pickle.

What an awful dream.

I can't wait to start the real class though.

REUJ2018 Leave a reply

## Rhetors

June 26, 2018 buzzetti

In Neal Stephenson's Anathem there were a fabled group of people known as the Rhetors. They were capable of retroactively changing history. To do this they changed traces of events. They would disappear news articles, delete

records, alter memories, etc.

Today I think I noticed their influence. It's always hard to be sure.

[REUJ2018](#) [Leave a reply](#)

## Scene

[June 25, 2018](#) [buzzetti](#)

Scene: Ilan sitting on chair he stole from Gabriel, Kira's chair is clearly at her desk.

Enter Kira, stage left.

Ilan: [to Kira] Do you want your chair back?

Kira: ...nnno...

Ilan gets up and attempts to dismantle the back of Kira's chair; fails.

Kira: What ... Don't take my chair

Ilan: I'm not

Kira: Don't take my chair

Ilan: I'm just trying to take the back

Kira: What?

Ilan: You said you didn't want your chair back.

Kira: No I do want my chair back

Ilan: You said you didn't

Kira: You should've specified

Ilan:

Kira:

Ilan:

Scene

[REUJ2018](#) [1 Reply](#)

## Work Strats

[June 21, 2018](#) [buzzetti](#)

1. Aim to stop working with at least one task incomplete and with a good understanding of the work to be done next. When you come back in the morning or from the meeting or whatever prompted the break from work it will be easier to start up again. I hypothesize this works by facilitating entering the state of flow.
  2. Take on more work than you can handle. That way:
    - A. To work on lower priority work will feel like a break from more pressing and higher priority work
    - B. In a similar vein you will always have something to do
    - C. That-which-is-important-to-you will manifest itself as an emergent phenomenon of your choices regarding where to allocate your efforts and what you are willing to triage
  3. Listen to [Super Deep Brown Noise](#)
  4. Mix that with [Brown Noise](#)
- This is how I like to mix them:



Super Deep Brown Noise (12 Hours)



Brown Noise 8 Hours, for Relaxation,

Those are all the strats I can share.

[REUJ2018](#) [Leave a reply](#)

## You know what they say

[June 20, 2018](#) [buzzetti](#)





## Busy

---

June 18, 2018 buzzetti

Trying to cram a bunch of lit review in whenever I can. The structured aspect of the program is becoming a nuisance retroactively. I need more time scheduled for reading.

Short post. About the 3d modeling – they told me not to post pics of the scene. But over the weekend this vigilant computer finished batch rendering enough frames to make an animation. They never put a constraint on what I can do with that. All I need to do is learn to stitch disparate frames with FFMPEG.

REUJ2018 Leave a reply

## Friday Template Instantiation

---

June 15, 2018 buzzetti

What did you get done from your Monday list? What did you do that you didn't expect to?

Monday List:

1. Rewrite our Problem Area Paragraph with my team mates Ahmed and Leilanie.
2. Get a machine learning environment set up. Today I got python and various packages installed, including Keras and Theano.
3. Get the same environment set up for my team mates.
4. Do some Machine Learning tutorials. So far the one suggested directly by Pranamesh [this simple cats vs dogs classifier](#).
5. Go see some TIMs in the field on Wednesday.

Got done: {1,2,4,5}

The matter of 2 is questionable. I intended for the environment to be on Reagan, but getting Tensorflow to play nice turned out too much to ask for. So for the actual ML part of this research I will be using my personal computer.

My team mates handled their environment set up valiantly, and thus I could not accomplish 3.

—

I didn't expect to shoulder any new responsibilities. Now, however, I am embroiled in two side affairs. One involves Jamiahus, the other Cole. For Jamiahus I am to have a go at analyzing the log files from his virtual-environment-team-interaction experiments. For Cole I have volunteered to attempt to make the data cleaning process simpler, with the original intent to have it automated.

REUJ2018 Leave a reply

## Music Vids for Stephen

---

June 15, 2018 buzzetti

He shows music videos at the beginning of his classes. The criteria is that they can not be about relationships. Naturally this rules out a lot of music, and he has requested suggestions. I propose the following...

[Alice](#)

[Bloom](#)

[Photosynthesis Song](#)

[Pentagon Song](#)

[I'M A SCATMAN~~~~~](#)

[Scatman's World](#)

[Edge of Night](#)

[Counterstrike \(Musical history lesson\)](#)

[Bustin' \(Guaranteed hit\)](#)

[Bring King to Life \(Maybe not though\)](#)

[Sexy Naughty Bitchy Me](#)

[Major Tom \(Peter Schilling\)](#)

[99 Luftballoons](#)

[Rasputin](#)

[Rasputin \(Turisas\)](#)

[Down Under](#)

[Safety Dance](#)

[Cows Cows Cows \(Cyriak is a goldmine\)](#)

That's all for now...

REUJ2018 Leave a reply

## Thursday Template Instantiation

---

June 14, 2018 buzzetti

Whom did you work with this week to accomplish tasks? How did the interactions take place?

On Monday I worked a lot with Paul. He installed Python 3.5.4 on our computers, not once, but 2 or 3 times. The interactions were pleasant – he was both helpful and affable. Someday he will tell me whether freeze dried guacamole is good or bad. I can't wait.

I also worked with my team mates. We got the ML environment up and running and worked together to finalize the first rough draft of the Problem Area Paragraph for the actual research we will be conducting. We went to meetings together and provided a unified front against the onslaught of grad students and professors trying to tear us down with deadlines and advice.

Today we re-re-met Cole, a student somehow involved in TIMELI but not a SPIRE intern. We haven't quite worked together yet but I finally interacted with him. The poor fellow has been stuck doing janitorial duty on data. He's taken an organized approach though, so at least he works smartly. You can tell the interaction with him went well because I can sort of speak to his character.

Last but not least are Austin and Holly, the two grad students taking us through the 3D modeling part of the SPIRE training. More on that to follow.

 REU|2018  [Leave a reply](#)

---

## Language Assimilation

 June 13, 2018  buzzetti

This morning I woke gradually from a restless slumber with the words 'extramuros', 'Praxic-era', 'counter-Bazian', 'metatheorics', 'speely' floating through my sleep addled mind.

Lately I've been reading Neal Stephenson's [Anathem](#). Being a good scifi book it is loaded heavily with vocabulary specific to the setting. At first I was afraid and petrified thinking I could not read it without a comprehensive dictionary by my side. But I spent so many nights flipping the pages one by one and I grew strong, and I learned how to interpret on.

In earnest though, the quantity of words without meaning at the beginning was daunting. This wasn't a foreign experience so I knew that I would figure it out eventually, and the foreword helped quell any lingering uncertainties regarding the matter. Regardless of my familiarity, I still find it so intriguing how humans can learn new words without having them explicitly defined. This fascination is probably enhanced by my current foray into the realm of Machine learning. The mechanism for this human learning relies on patterns of context and deductive reasoning as far as I can tell.

 REU|2018  [1 Reply](#)

---

## Tuesday Template Instantiation

 June 12, 2018  buzzetti

Tuesday: What categories of tasks do you have this week? Procedural? Requiring careful thinking?

This week I have process following tasks (setting up an ML environment and doing some basic ML tutorials) and comprehension tasks (understanding the significance of each step of the tutorials). The process following tasks are simple and sequential and require little cognitive engagement. The comprehension task, however, requires attention. Technically the comprehension task is not required for this week, nor ever. If I deliver every deliverable it is unimportant whether I understand the process or what I have done. Indeed, it is preferable to work with a successful, reliable, productive automaton than with a bungling, lazy philosopher. But I think that comprehension will ultimately increase the likelihood of success, and the sooner I understand the fundamentals the better. So I set it as a goal for the week.

 REU|2018  [Leave a reply](#)

---

## Monday Template Instantiation

 June 11, 2018  buzzetti

Monday: What do you plan to accomplish this week?

My plans for the week are:

1. Rewrite our Problem Area Paragraph with my team mates Ahmed and Leilanie.
2. Get a machine learning environment set up. Today I got python and various packages installed, including Keras and Theano.
3. Get the same environment set up for my team mates.
4. Do some Machine Learning tutorials. So far the one suggested directly by Pranamesh [this simple cats vs dogs classifier](#).
5. Go see some TIMs in the field on Wednesday.

This should be done by Thursday 2:10pm. If I finish early then I intend to learn what I might need to know for image segmentation.

 REU|2018  [Leave a reply](#)

---

## Why HCI?

 June 8, 2018  buzzetti

Assignment: post 2 examples of poor user interfaces.

Gladly.

1) This is the exit from the gym part of State Gym. The two turnstiles are always slow to let me through, but just barely so. I have to stagger a half step upon coming up to them. It is very very minor and very very frustrating.



2) Also this setup: ISU gives us these cards that open electronic locks, and they give us these holders for our cards, but the entire system is incompatible. The locks are not sensitive enough, or the signature of our cards not strong enough, to the point that the card will not be detected if kept within the card holder. And so anytime you come across these weak electronic card readers (which there are many of) you have to take your card out just to use it as intended. The specific lock shown is on guards the passage from the bathroom back to the lab.





REU|2018 2 Replies

## Microscope

June 7, 2018 buzzetti

Having scheduled game time gave me the opportunity to bust out Microscope – a collaborative history building tabletop game. That’s one more thing to cross off my REU to-do list. I had planned on doing this at some point but it is a tough game to get people to be interested in. The setup is brutal if people are timid, which I often am.

So far the team has come together to decide that humanity unearths a thousand dead civilizations among the stars. We have Chad, **The First**, being stripped in the public plaza market of Luna Prime – the first and most populous lunar city. Shortly after he revealed his supernatural powers to the public by a very anticlimactic after-image disappearing. This was seen only by Mayor Lovegood, a security guard, and a fortuneteller.

How will history unfold? Only time will tell.

REU|2018 Leave a reply

## More than a Nap

June 6, 2018 buzzetti

Though I don’t actually nap... I just thought that titling this any of (“More than a Rest”, “More than a Sleep”, “More than a Dream”, “More than a Snooze”) sounded worse than “More than a Nap”.

### Sleep

Sleep is very important to me. It is of the few things I hold truly sacred. This is primarily due to two reasons:

1. I know the effects of sleep deprivation all too well from first hand experience and from learning about them
2. I have an absurdly difficult time falling asleep

Just as I try to optimize my diet and work diligently on maintaining an exercise routine, I also strive to maintain a healthy sleep schedule. In order to do this I have to follow some daily rules (subject to degrees of exceptions) so that I can fall asleep more easily nightly:

- Eliminate exposure to light emitting screens past 8:00 pm
- Stay hydrated throughout the day, stop drinking close to bedtime
- Exercise daily
- Do something productive daily (otherwise I go to bed fixated on the idea I’m wasting my life away)
- Brush teeth and floss
- Read outside of bed until drowsiness sets in

In some way or another each of these serve to reinforce my ability to fall asleep.

I thought I’d have more to say about each of these – eating/dieting, exercising, and sleeping – but I guess that was the illusion of competency. If I think of any minor additions I will modify the relevant posts. If I think of any major additions I will create an addendum post.

That’s it,  
sweet dreams~

REU|2018 Leave a reply

## More than a Rep

June 5, 2018 buzzetti

A paraphrasing that I remember better than the quote itself:

*To the beginner, a punch is just a punch. To the adept, a punch is more than a punch. To the master a punch is just a punch.*

### Exercise

This morning I was finally able to start the routine of going to the gym before work. There is not much to say – the routine was simple. I started with the holy trinity – bench press, squat, deadlift – then I explored the various other things State Gym has to offer. I always have a warm up period when starting a work out routine where I walk around the gym dazed and confused. It is fueled in part by the deteriorated confidence from the deteriorated strength. By week 5 this should no longer be an issue. I simply wish that we had gym access since the first day.

Have I noticed a difference today compared to other days? At the time of writing (10:43 AM) it was too early to. Now I am confident that, though no causal relationship should yet be inferred, I am feeling more attentive and engaged today than I have been recently. Which is the expected result according to my working hypothesis: unintuitively, a dose of exercise will help boost energy levels, a static sedentariness will sap the will to engage.

Wish I had more to say, but I haven’t done much cursory research on the subject of proper exercise regimens.

REU|2018 Leave a reply

## More than a punch

June 4, 2018 buzzetti

*Before I studied the art, a punch to me was just like a punch, a kick just like a kick. After I learned the art, a punch was no longer a punch, a kick no longer a kick. Now that I’ve understood the art, a punch is just like a punch, a kick just like a kick.*

-Bruce Lee

[http://refspace.com/quotes/Bruce\\_Lee/Q1390](http://refspace.com/quotes/Bruce_Lee/Q1390)

While the real work has yet to start I’d like to take this opportunity to talk about the essential routines of everyday life that have far reaching impact on our ability to function effectively. These impact our cognition, mood, energy levels, health, and probably more. Though these routines are ubiquitously important they are so familiar that they require no attention. They are eating, sleeping, and exercising. At my current stage in life a diet is more than just a diet, a sleep schedule more than just a sleep schedule, and an exercise regimen more than just an exercise regimen.

(disclaimer: I believe in a causal relationship between <eating;sleeping;exercising> and their stated influences above

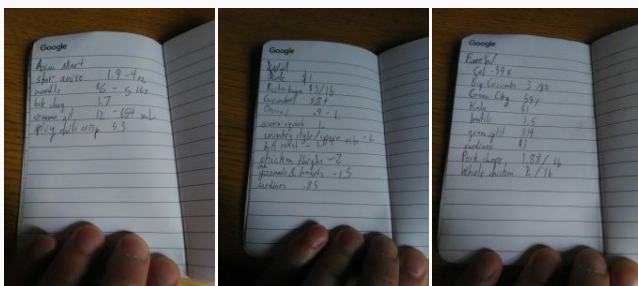
though I have not myself read this)

## Eating / Food

Of the sacred triad it is the most difficult component to get under control, because although it is important all too many people can't afford to buy whatever foodstuffs they want indefinitely. Thus I have two constraints on my diet: nutritional sufficiency and cost.

And I take the diet optimization task very seriously.

As soon as I had the free time to do so I scouted out a large selection of nearby grocery stores. These are the meager notes I took:



This is low effort compared to my food data collection in the past...

The first day here we went to some deli where a pitifully small barely-satiating sandwich was \$7.41 (or so). Ridiculous. I estimate that with proper planning a meal lineup for an entire week can cost \$35 + time & effort (for cooking). This is for a humble quality of life. A king might get away with \$50 a week. This excludes the cost of pantry essentials like oils, vinegar, spices.

These initial estimates were made when I was living in locations where a 1lb bag of lentils was \$1, they may not work here where that same bag is \$1.50. I am, however, determined to try sticking to my initial estimates and adapting to the food available to me. So far I have tried out: pasta with sardines+sardine juice (surprisingly not bad), chicken gizzards & hearts, leeks (boiled in gizzard & heart water), roasted whole chicken, oatmeal and pinto beans. These experiments, though yielding mixed results, have ultimately been fun and nutritional in their lessons taught.

Finally, my first draft of daily expenditure:

- 1 lb meat (poultry or pork) – \$1.99
- 1 lb cabbage – \$0.78
- 1/2 lb pinto beans – \$0.50
- 1/2 leek – \$0.50
- 1 tin sardines – \$0.84
- 1/2 lb onion – ???
- Total – 4.61 + ???

I have yet to do a nutritional analysis, but so far it seems almost balanced. The cabbage, leeks, and onions may not provide me with the full profile of vitamins and minerals. In this case I suspect that one of broccoli, kale, or chicken liver will be able to shore up that deficiency.

I am excited to try chicken liver.

[REU/2018](#) [Leave a reply](#)

## TIMELI REU Participant Direction

June 1, 2018 buzzetti

On Thursday May 31<sup>st</sup>, 2018 we finally met with the research teams we will be working with. Part of the discussion was the scope of the project and what we, the REU participants (from here on out "interns"), want to do for the project over the coming 9 weeks. We immediately found an issue.

Leila and I want to work on the AI/Machine Learning part of TIMELI. Ahmed is uninterested in this line of work, and would more like to focus on the UI and HCI aspect of the TIMELI app.

What's the big deal?

These two directions are orthogonal, as best I can tell. The ML runs in the background and provides a service that can (if implemented well on the frontend) assist the TIMs. The UI and HCI direction, among other things, includes the responsibility of tying the ML system to the TIMELI app frontend, but acts independently of backend implementation. This would not be an issue if we had the same freedom as a collection of three grad students. However we are interns in the same program and thus it is unlikely that the Dr. Gilbert and Dr. Winer will concede to splitting the team along lines of interest. This would go against the teamwork and problem resolution spirit of the program and would probably cause an undesired logistical headache for the next 9 weeks.

My Motivations?

I should provide a deeper explanation of my motivation to pursue the ML direction. I intend to pursue a Master's Degree in Computer Science with a focus on Intelligent Systems. I have done little work outside of the classroom that deals with applying ML and AI concepts, so I view this as a valuable opportunity to get hands on with real world machine learning. I am yet unfamiliar with doing hard work in an unstructured environment. I believe that this route would lead to working in a semi-structured semi-unstructured environment where I can learn how to work on open problems while still having resources (mentors) available to help and provide guidance. Additionally since the REU is semi-unstructured and I have not worked in depth with Machine Learning this route is a guaranteed challenge. And a good challenge is something I desperately desire.

My Concession

I did come into TIMELI with the expectation it would be frontend work, and without the expectation that it would include backend work (ML). This is Ahmed's experience as well. But where I am excited by the new opportunity, he is

disinterested at best. I don't view the UI and HCI direction with disinterest. Indeed, I would like to learn to design interfaces that facilitate the user in their accomplishing of their tasks. But as I emphasized earlier: the ML route is relevant to my long term interests, the UI/HCI direction is much less germane.

[REU|2018](#) [Leave a reply](#)

## Basic post for security reasons

---

[May 31, 2018](#) [buzzetti](#)



[REU|2018](#) [iris](#) [Leave a reply](#)