



Summer Program for Interdisciplinary Research and Education – Emerging Interface Technologies (SPiRE-EIT)



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An experimental study of 3D scanning systems for quality inspection in manufacturing

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In the coming era of Industry 4.0, all members along the manufacturing pipeline should keep track of parts in different locations. However, a practical challenge is that a downstream manufacturer may use a different optical system for dimensional measurements or quality inspection from an upstream manufacturer. It is assumed that various optical systems will provide almost identical 3D data if observing the same part. Unfortunately, this is not the case especially in micro/nano scale; different optical systems can disagree, causing confusion when data is shared by all members of the manufacturing pipeline. In this project we will examine the different performance data from optical 3D scanning systems and identify ways to intelligently match 3D data of the same surface, even if the 3D data have apparent variations. This study can be extremely beneficial to many different applications where optical 3D scanning is an extensively used tool, such as entertainment, medicine and precision agriculture.

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Funded by NSF



NSF Grant #1757900

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