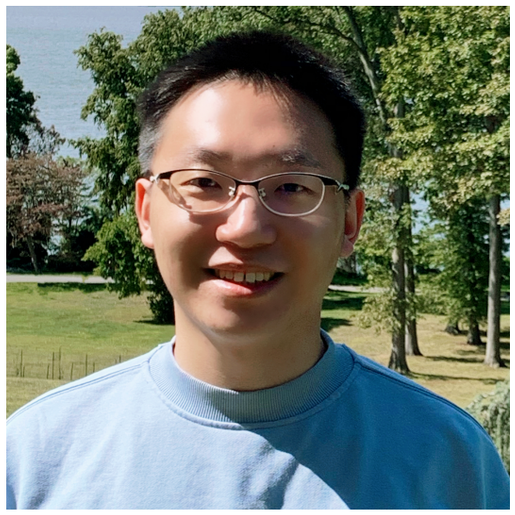
NRI: FND: Learning Visual Dynamics from Interaction

PIs: Carl Vondrick and Hod Lipson
Students: Boyuan Chen and Mia Chiquier

Columbia University
New York, NY

NSF Award 1925157
Short Talk 9

NRI PI Meeting 2021



Where to place the camera?

Amazon Pick and Place Challenge

Image Source: https://www.youtube.com/watch?v=1QqQLq5hsN4

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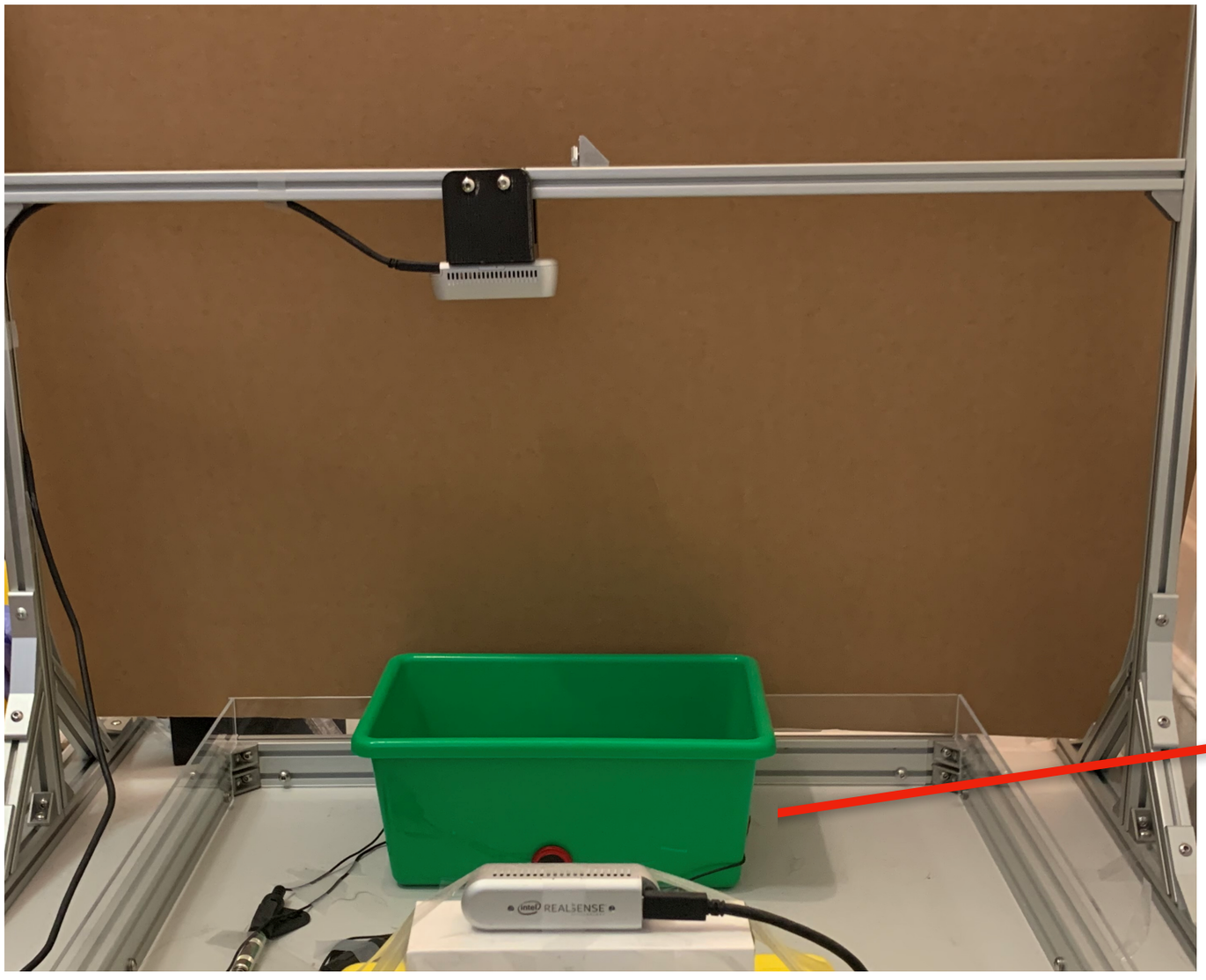
The Boombox

Audiovisual Scene Reconstruction



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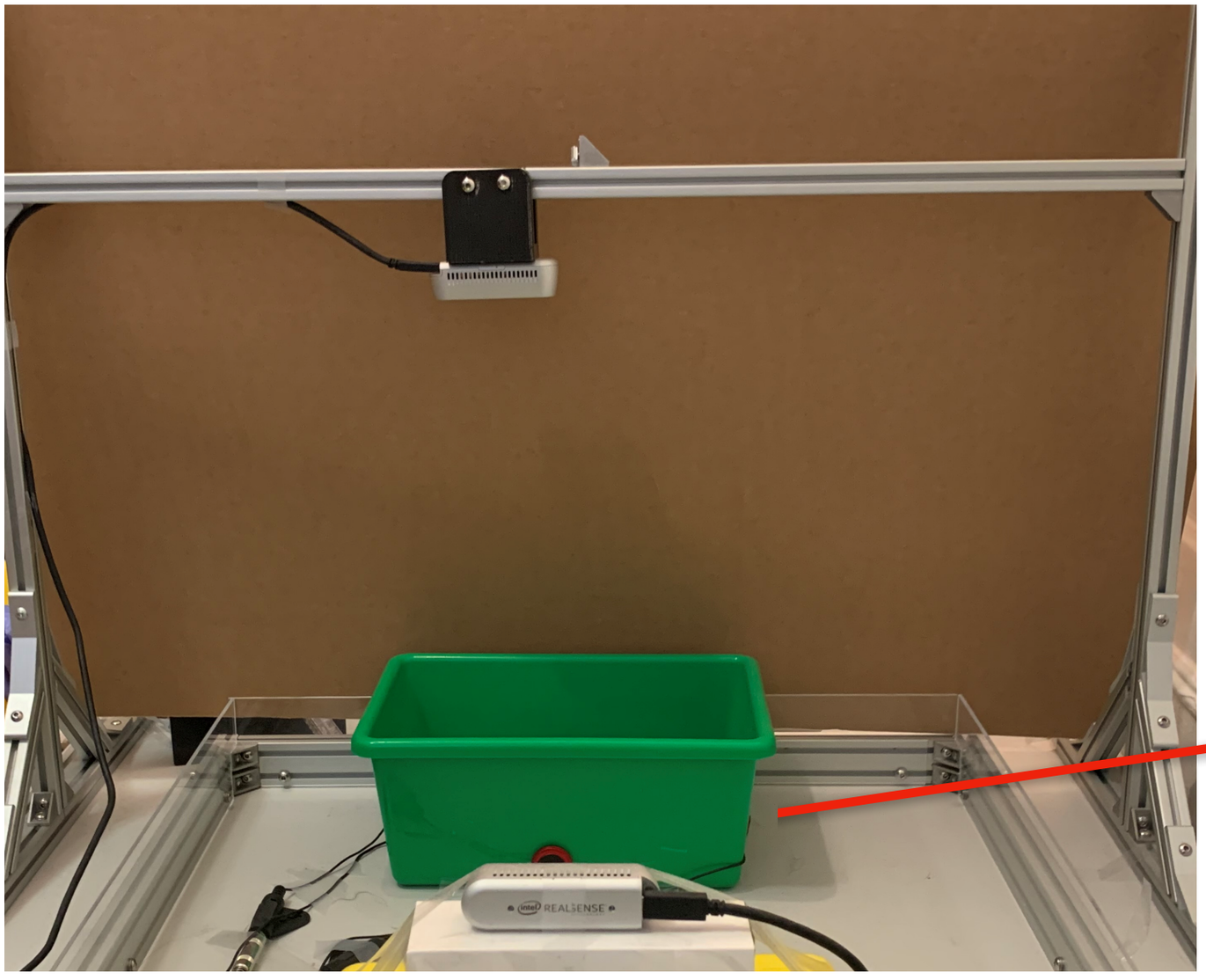

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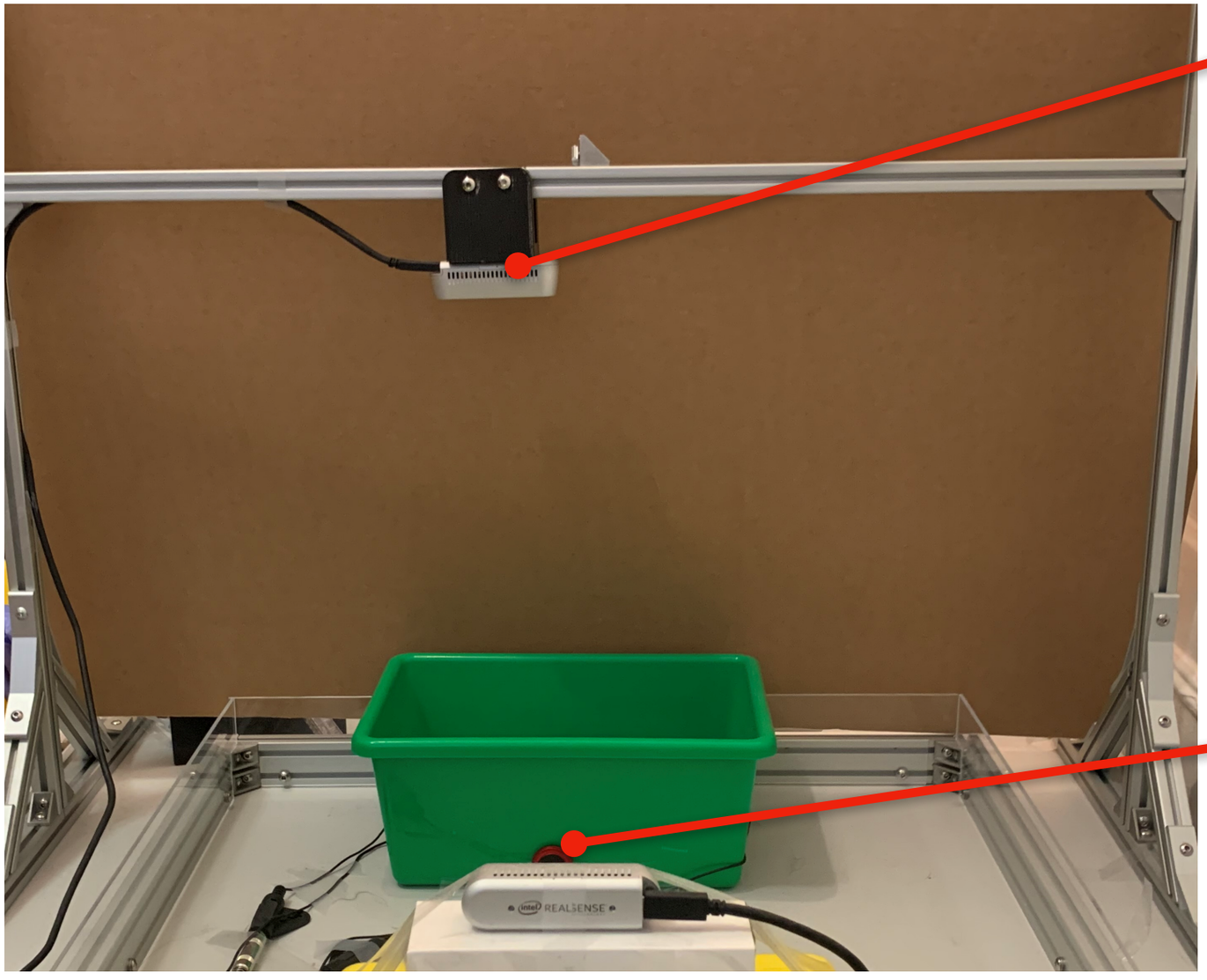

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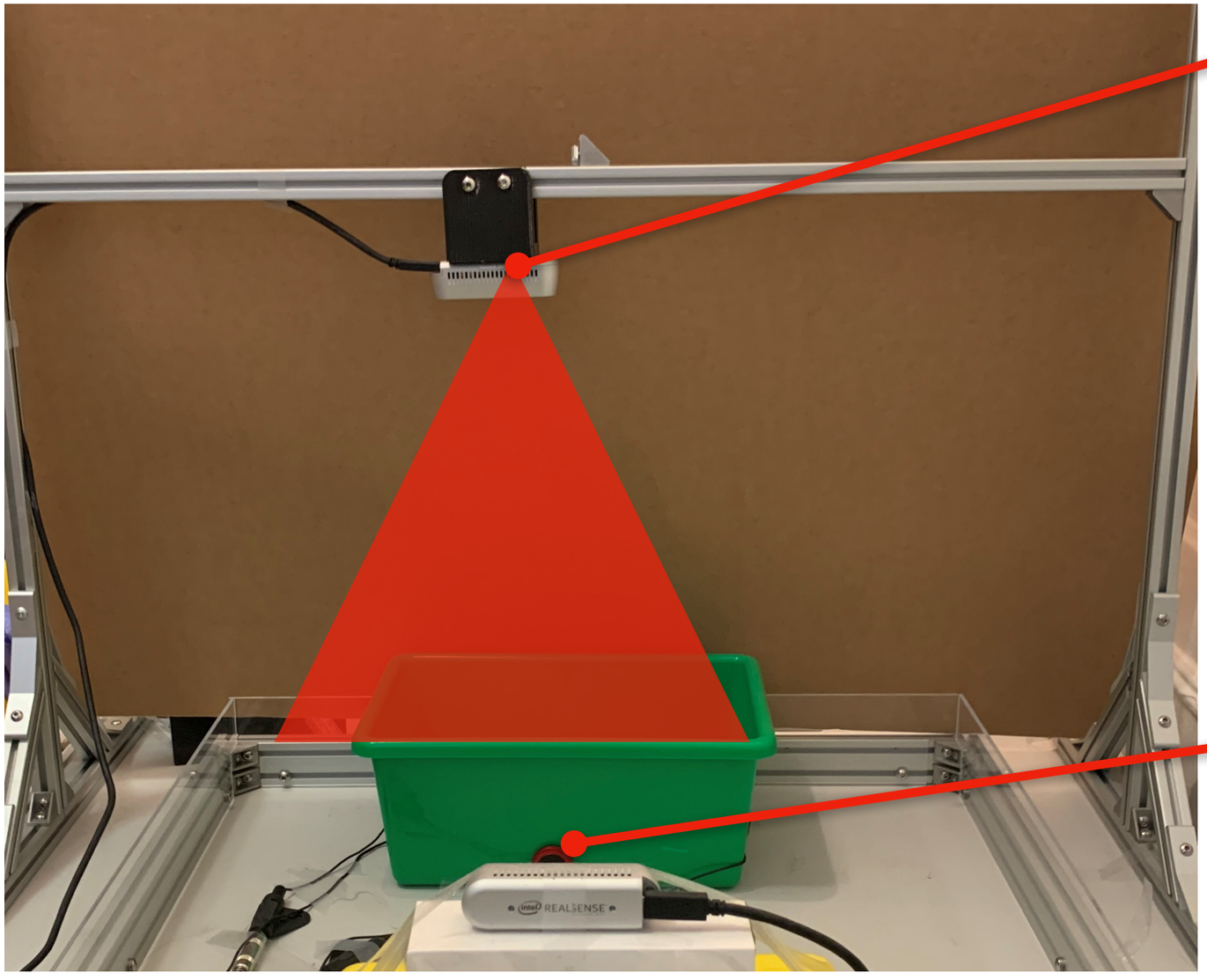

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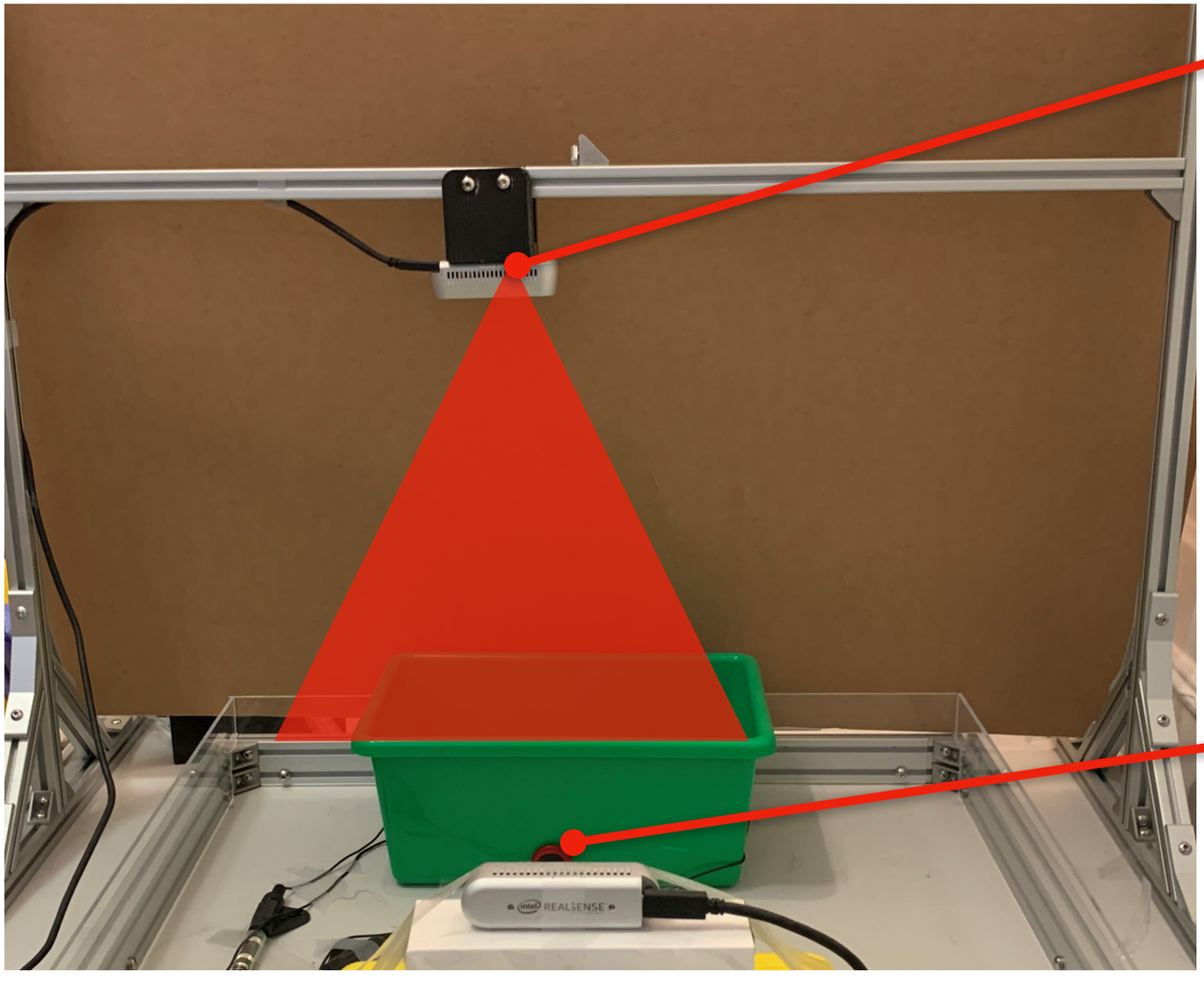
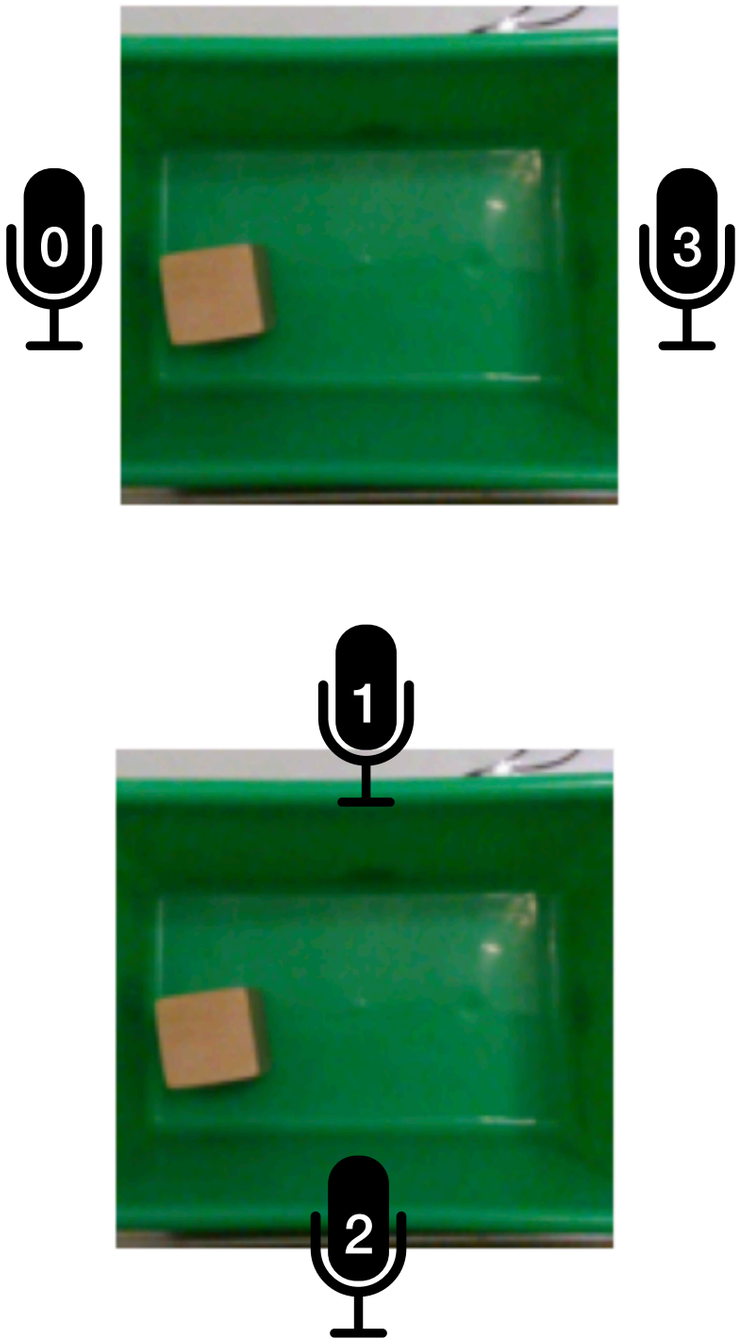
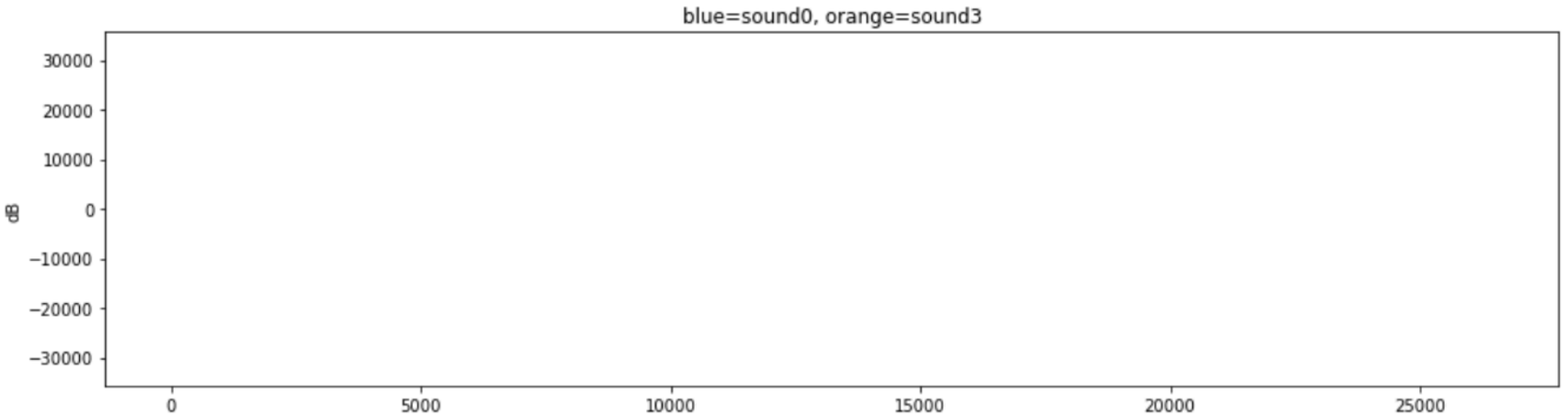


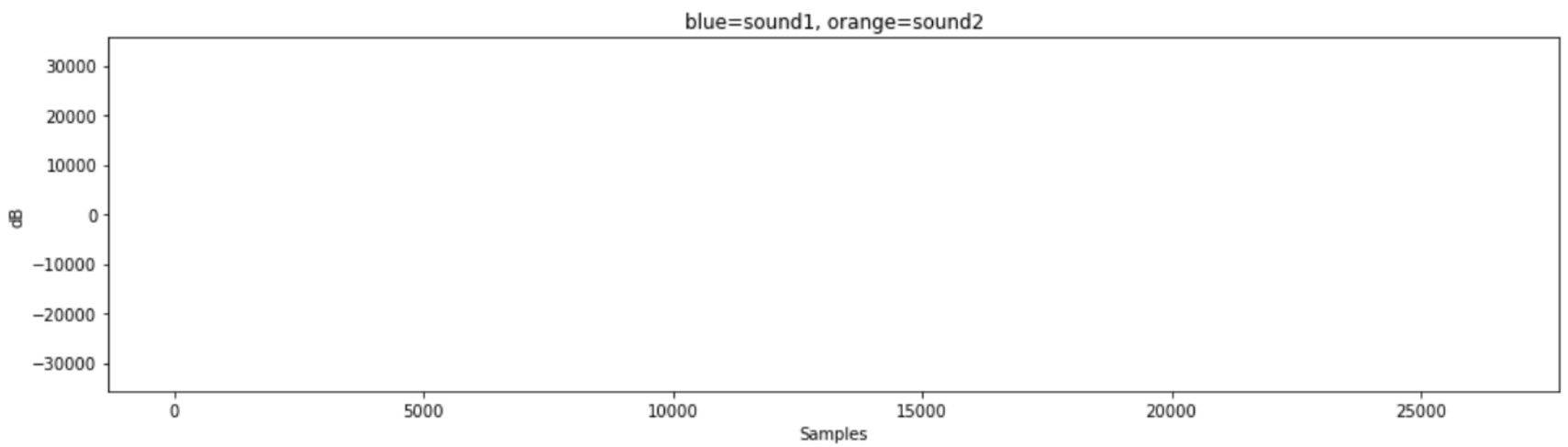
Top-down camera

Contact Microphones
(each face)

Acoustic Traces







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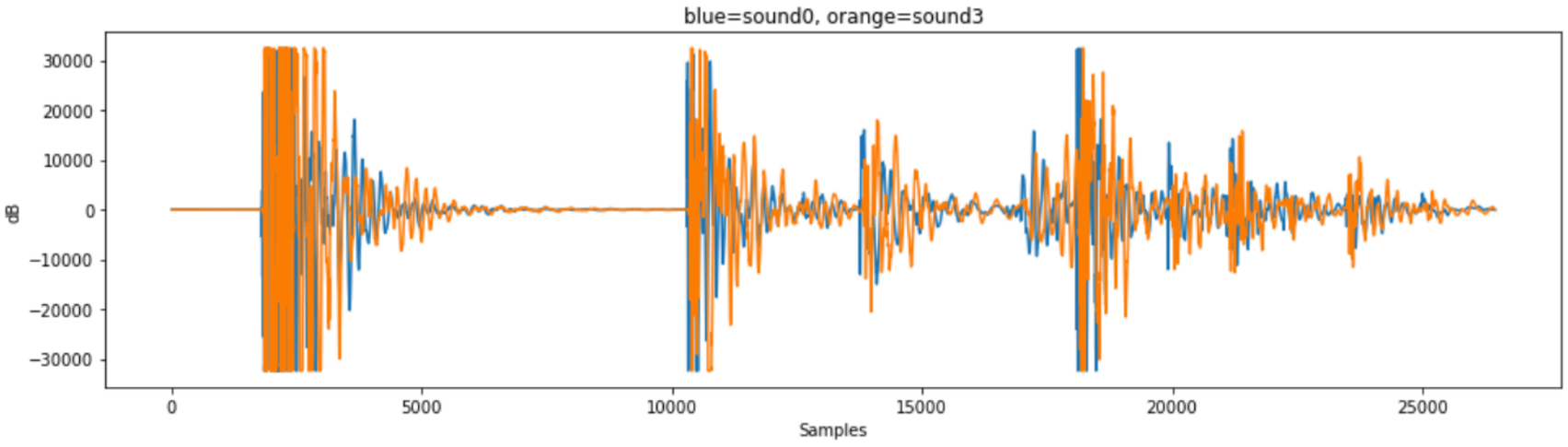
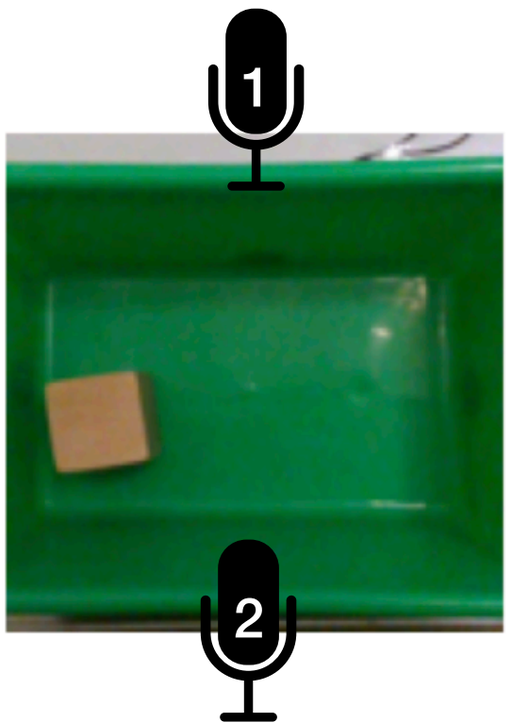
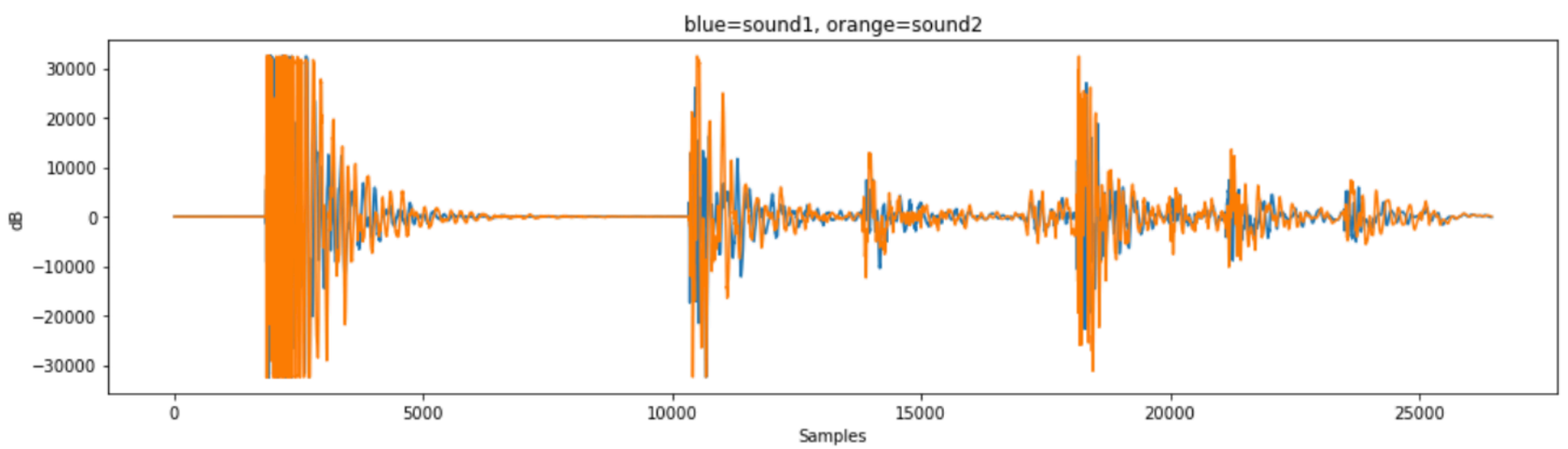
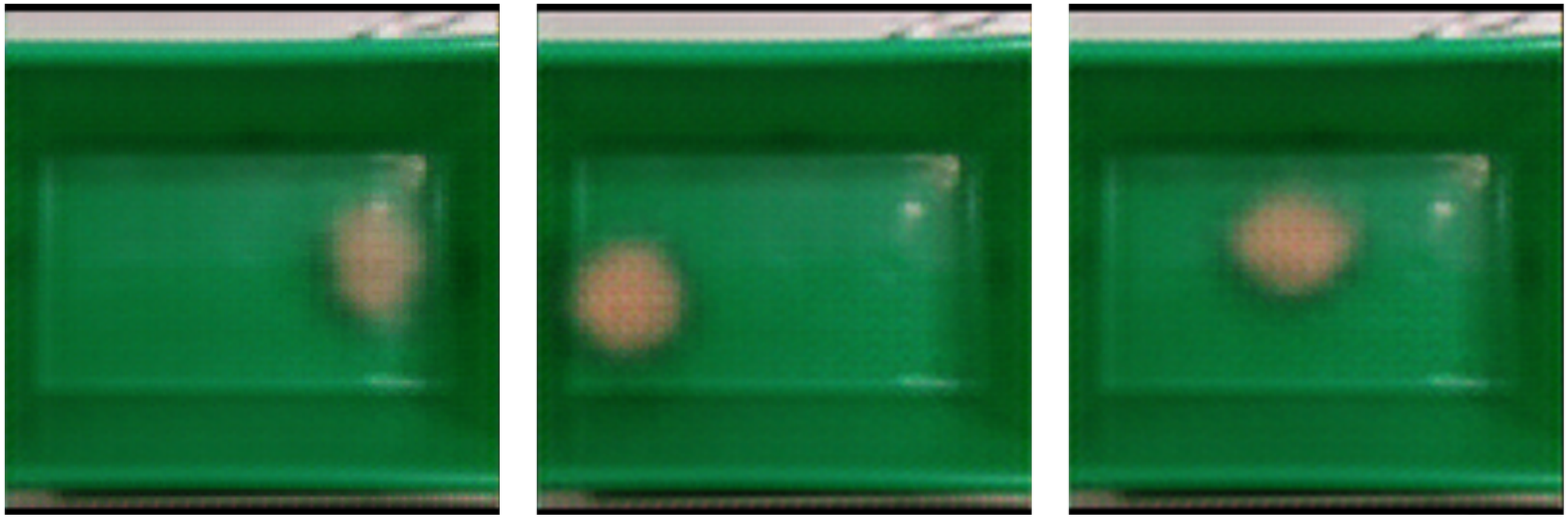






Reconstruction from Audio

Prediction



Ground Truth

Broader Impacts

- Research products are integrated into undergraduate courses in mechanical engineering and computer science courses about robotics to introduce students to audiovisual perception

- Robust audio perception will enable robots to handle more more realistic situations where visibility is poor, such as in places of work or emergency situations

- Project provides training for two graduate students in interdisciplinary research at the intersection of mechanical engineering and computer science

- Project has provided hands-on research opportunities for two undergraduate students in computer science

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