

Title: Process Development to Convert 3D Printed Prototypes to Injection Molded Parts

Research area: Operations research

3D printing is a powerful tool for the rapid development of parts and products. Often, 3D printed prototypes are developed to test the fit and function of a part or mechanism. Occasionally, a mechanism requires a flexible component, such as a small plastic cantilevered beam that deflects under load acting as a spring.

In this project, participants will be tasked with developing a process by which the design of 3D printed parts can be altered for manufacture by injection molding. To guide the effort, the participants will be given the design of a 3D printed computer input device that employs the quasi-elastic deflection of slender beams for the operation of its buttons. The goal of the project will be to create this novel process and demonstrate it on the sample design. Ideally, the process will be developed to minimize cost of part production, and minimize the changes to the form, fit, and function of the components.

This project is open to MEng students. Teams of two are welcome, but not required.

Required skills:

- Ability to work independently
- Demonstrated ability to use CAD
- Good grasp of mechanisms
- Knowledge of injection molding

Preferred skills:

- Experience with 3D printing

Interested applicants should send an email to [jy.lam@utoronto.ca](mailto:jy.lam@utoronto.ca) with the following

- Resume/CV & unofficial transcript
- One or two-paragraph statement of interest written by a human.
- Sample of work: link to online portfolio, sample designs, past design proposals or review presentations, etc.