Automated Fiber Placement

Composite Automation

SAM XL is a manufacturing expertise centre with a focus on automated low-volume manufacturing parts of high complexity. SAM XL researches and demonstrates new technologies, techniques, and materials for aerospace applications using robotics, lightweight composites and specialised manufacturing techniques.

Automated Fiber Placement (AFP) is a composite manufacturing process in which a robot lays down composite tape to build a composite laminate one tow at a time. AFP is interesting to SAM XL because it produces complex, lightweight structures. Both thermoset and thermoplastic materials are being explored.

The placement of the tows has a crucial effect on the performance of produced parts. Therefore, planning how tows should be placed and ensuring that the tows have indeed been placed as planned are topics interesting to SAM XL. To ensure correct tape placement and increase reliability, upgrading the AFP end-effector with additional sensors and actuators is interesting.

The following positions are available:

- 4-6 month internship working on the AFP tool, learning the process, investigating pain points of the system and designing and integrating improvements
- 3 month internship creating a Rhino/Grasshopper program to program toolpaths for AFP, taking fiber angles and curvature of a CAD surface as design inputs.
- MSc thesis topic involving manufacturing trials to push the TRL of in-situ consolidated thermoplastic AFP higher. Involves manufacturing trials, improvement of the process, validation by NDT and mechanical testing.

Your profile

You are:

- HBO or WO engineering student
- Fast learner & independent worker
- Enthusiastic about composites

Profile of your potential employer

We offer:

- A cool workspace with a lot of robots
- Access to high-end hardware
- Dynamic and experienced colleagues
- Mentoring in task scoping and implementation
- Exposure to robotic manufacturing technology know-how
- An internship renumeration.

Application process

Interested candidates should submit their resume and a cover letter detailing their interest and relevant experience to internships-samxl@tudelft.nl. Applications will be reviewed on a rolling basis until the position is filled.

Join us at SAM XL to gain hands-on experience in cutting-edge composites research!

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