

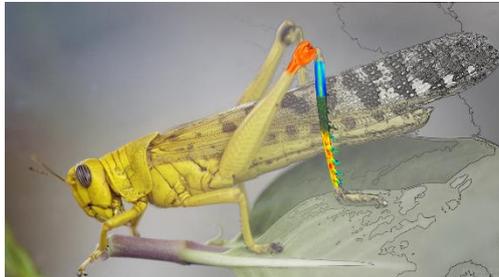


MAX-PLANCK-GESELLSCHAFT

Master Thesis: 3-D Imaging of Locust Exoskeletons

Department of New Materials and Biosystems / Perceiving Systems / Optics & Sensing Laboratory

The Max-Planck-Institute for Intelligent Systems in Tübingen is looking for a master's student to be part of a pioneering project that applies the cutting-edge technologies of computer vision and 3-D scanning/modelling to understanding the mechanics of the locust exoskeletons. You will develop new



scanning hardware and software solutions that will aid in gathering information about the incredible natural ability of locusts to land on unpredictable surfaces without injury. You will work closely with the Department of New Materials and Biosystems. You will gain interdisciplinary knowledge in 3-D mathematical modelling and 3-D scanning hardware design, as well as programming skills.

Why locusts are interesting

Arthropods, and in particular insects, can be considered the evolutionarily most successful multicellular organisms on earth. Part of their evolutionary success is the versatility of their cuticle exoskeleton, consisting primarily of chitin fibres within a protein matrix. Its versatility and biomechanical properties make cuticle an extremely interesting candidate for the design of new bio-inspired composite materials.

What we are looking for

The candidate will be a highly motivated master's student with a background in computer vision, electronic engineering, or informatics; good English communication skills; and a readiness to work with live insects.

Requirements

- Strong background in programming and low-level hardware development
- Previous coursework in computer vision and computer graphics
- Basic knowledge of cameras
- Good English skills are mandatory; German language skills are a plus.
- Willingness to travel to Stuttgart to conduct experiments with live locusts
- High interest to work in an interdisciplinary team

More info on insect:

Biomechanics



Perceiving Systems



What we offer

Guides from leading researches in the field 3D modelling and 3D scanning. Your monthly pay will be approximately 400 Euros per month.

Contact

Candidates should send their application in English via e-mail to senya@tue.mpg.de.

The application should include **2 PDF documents**:

- 1) Your CV, with a list of relevant coursework during your higher education
- 2) **One-page** document answering the following questions:
 - a) Briefly explain which 3-D scanning technologies are you familiar with; feel free to add pictures.
 - b) What possible solution do you envision to scan small, variable, quickly moving insects?