

Funded PhD Positions in Computational Biomimetics

About this position:

The Computational Multi-Physics Coupled Analysis Laboratory at Kyushu Institute of technology, which is located in Fukuoka Prefecture on the island of Kyushu, Japan, is currently offering the funded Ph.D. position, with start date of Spring/Fall 2024. The successful candidate will carry out researches in the areas of computational mechanics for biomimetics, and coupled multi-physics problems such as flying insects and energy harvesting.

Research focus:

Our research interest is to discover and use principles from natural systems to create physical models, engineering systems and technological designs. In the current project, we are exploring Computational Biomimetics based on our advantages of computational methods for coupled multi-physics problems (<http://www-solid.mse.kyutech.ac.jp/en/>) and MEMS facilities (<https://www.cms.kyutech.ac.jp/>) through a challenge for flying insects.

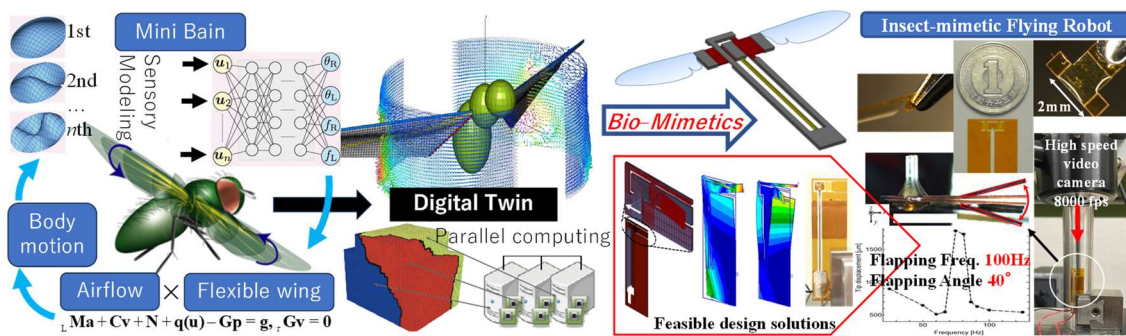
The advantages of flight over other forms of locomotion lead to the dispersal of insects all over the world. They can perform extreme aerial maneuvers with robustness using their flapping wings. Their flight abilities have become increasingly refined through a long period of natural selection. It is expected from emulating nature's time-tested forms, functions, and strategies in insects with understanding their underlying principles and mechanisms that we find sustainable solutions, which are engineering alternatives to nature's solutions, and we solve practical problems. Since this concept is multidisciplinary, the computational approach or Computational Biomimetics is essential.

The research topics include, but not limited to:

- Numerical models, algorithms, and methods for coupled airflow, flexible wings, body motion, and micro brain in flying insects (below figure left)
- Mechanism of control and maneuverability in free-flying insects
- Smart and intelligent flight system of tiny insects
- Design and fabrication of insect-mimetic robots using MEMS (below figure right)

Our most recent contributions to academic societies can be seen in:

- <https://www.wccm2022.org/minisymposia0405.html>
- <https://cfc2023.iacm.info/event/area/d5a7b66a-0807-11ed-b993-000c29ddfc0c>
- https://www.mdpi.com/journal/biomimetics/special_issues/M9110WVU2D



Qualifications:

The ideal candidate should have earned a Master's degree in Mechanical Engineering, Applied Mathematics/Physics, or a closely related field. The candidates with Bachelor's degree with more than 3+ years of research experience are also eligible for the PhD position. Experience with scientific programming in Fortran, C/C++, Matlab, Python, or other object-oriented programming languages is a plus.

Funding:

- Up to 1,000,000 Yen to per annum
- Up to two positions
- Duration is three years

To apply:

The interested candidate should email Prof. D. Ishihara at ishihara.daisuke399@mail.kyutech.jp with the subject line "Ph.D. Application", including a brief cover letter, your resume or CV, and transcripts "in a single PDF file". The online interview will be given to the selected candidate who submitted this application. The detail of funding will be determined based on this interview.

Due date:

(Session 1) For the position from Spring 2024; 30th November, 2023,

(Session 2) For the position from Fall 2024; 31th December, 2023.

(Session 3) For the position from Fall 2024; 31th March, 2023.

The review of applications will commence immediately and will continue until the positions are filled.

General information for campus life can be available from our university web page:

<https://www.kyutech.ac.jp/english/campuslife/>

We are looking forward to receiving your application!

Daisuke Ishihara

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