Champalimaud Foundation

European Research Council

How does the brain estimate the estate of the body to control movement? The Sensorimotor Integration lab has a Mechatronics Engineer open position to help us answer this question by developing custom software and hardware systems for the analysis of neural activity in flies behaving in virtual worlds.

About us

The Chiappe lab at the Champalimaud Neuroscience Programme (ChiappeLab.org) takes advantage of the small size and compact nervous system of the acrobatic fly, *Drosophila melanogaster*, to examine how internal representations of the body give rise to adaptive movement control. The lab studies circuits involved in self-motion estimation, action selection, and movement correction (Fujiwara et al., Nature Neuros, 2017, Neuron, 2022). The lab uses many different techniques, including quantitative analysis of behavior (Cruz et al. Curr Biol 2020) and neurophysiology, modeling and connectomics, with the goal of identifying the circuit bases for flexible movement control at high resolution.

We are seeking to develop engineer methods to expand our ongoing efforts to generate precise quantitate measurements and perturbations of neural activity and behavior in more naturalistic experimental paradigms.

About the Mechatronics Engineer role:

We have a great opportunity for a Mechatronics Engineer to join the lab team under an ERC-funded grant. The position opens January 1st, 2024, and is possibly renewable upon annual positive evaluation. The candidate will be a multifaceted engineer who will develop and support custom-made hardware systems for naturalistic behaviors in simultaneous with neurophysiology and in closed loop with virtual worlds. The position's responsibilities include software development (C++, Python) and integration with custom-made hardware for real-time systems (soft or hard), instrumentation and fabrication, and electronic circuit design. We seek candidates who enjoy working both independently and who will also work closely with neuroscientist in our team.

What we provide:

- Competitive remuneration package commensurate with skills, qualifications, and experience
- A collaborative, intellectually stimulating, and diverse lab environment
- Opportunities for professional development
- Full immersion into the research excellence ecosystem with vibrant scientific community supported by state-of-the-art technology at the Champalimaud Neuroscience Programme

Your expected tasks:

- Extending virtual reality systems based on real-time, image-based analysis of neural activity and of fly behavior

Eugenia Chiappe, PhD
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- Development of new systems, including software, for walking behaviors in more naturalistic conditions
- Development of optical systems for improve time resolution of image-based acquisition of neural activity during behavior

Your expertise:

- A bachelor's or integrated master's degree in engineering, applied physics, or computer science
- Experience with data analysis and visualization
- Experience in design and fabrication of mechanical and electrical components. Additional experience in optics is a plus but not required.
- Experience in C++ and Phyton is required

Your skills:

- High organization, and attention to accuracy and precision of work
- Interest in solving problems creatively
- Interest in design development and proficiency in rapid prototyping
- Ability to work well both independently and in close relation to a small team
- Ability to work collaboratively and collegially.
- High proficiency in English

Physical requirements: Sustaining a typical seated or standing posture for prolonged durations; reaching and grasping by extending one's hand(s) or arm(s); possessing dexterity for manipulating objects and equipment with fingers, such as operating a keyboard; effective verbal communication skills; normal visual and auditory acuity; and the capability to navigate the workspace are essential for this role. The position necessitates mobility.

How to apply: a CV, letter of motivation, and two letters of recommendation (all documents in English) must be sent to Eugenia Chiappe (eugenia.chiappe@neuro.fchampalimaud.org). Please note that proof of qualifications may be required for the formalization of the position

About the Champalimaud Neuroscience Programme

The Champalimaud Neuroscience Programme (CNP) is aimed at establishing new links between nervous system function and behavior. Our interests are represented by the full intellectual scope of the scientists of the program. To achieve this goal, the CNP fosters colleagues to reach their full creative potential and promotes collective achievements through cooperation, exchange, and independence and diversity of thought. English is the official language of the institute. The institute is located at the beautiful waterfront of Lisbon, Portugal. Lisbon offers a sunny Atlantic-Mediterranean climate, affordable cost of living, and vibrant culture with good public transportation.

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