Student Research

Laboratory and classroom activities during a summer internship program

Research positions at both undergraduate and graduate level are available. If interested, please send me an email at: cristian.staia@tufts.edu.

Undergraduate Research

Over the years I have supervised undergraduate students with diverse backgrounds and majors: physics, chemistry, electrical and computer engineering and bioengineering. Typically undergraduate students that spend at least one year performing research under my supervision end up as co-authors on at least one major publication, which in the past included journals such as Physical Review E, Biophysical Journal and Nature Communications. Most of these students have also presented their research to major conferences such as American Physical Society March Meetings, Materials Research Society Meetings. Many of the former students working in my group have been admitted to top PhD programs in US (Berkeley, UPenn, Harvard, Stanford), to top Medical Schools (Tufts, Harvard) or a pursuing careers in business or engineering. In my collaboration with Prof. David Kaplan we have established a Research Mentorship Team (RMT), which coalesce a group of undergraduate students (from physics and biomedical engineering for each of their 2nd, 3rd and 4th years). The concept is based on having the seniors in the RMT serve as the upper class mentors to the second and third year undergraduate students, so that as each class progresses to their senior (thesis) year, they also gain first hand experience in mentoring undergraduates at the 2nd and 3rd year, helping to prepare them for their senior year.
Some of the current research projects for undergraduates:

1. Neuronal growth and alignment on patterned surfaces (Experiment). Click here for details

2. Modeling neuronal growth with stochastic differential equations (Theory). Click here for details

3. Neuron mechanics studied with the atomic force microscope (Experiment and Theory). Click here for details

4. **NEW:** Quantum computing using carbon nanotubes (Experiment and Theory)

5. Stochastic processes in non-equilibrium statistical mechanics, open quantum systems, and chaos theory (Theory)

There is a longer list of available projects for undergraduate students interested in the general area of biological physics, statistical mechanics or the foundations of quantum mechanics. Contact me at the above email address if you would like to learn more about these projects.

Graduate Research

There are openings for both experimental and theory research projects in my group at the PhD level. See above for the list of current projects, and contact me if you are interested in a research project in the general areas of biological physics or non-equilibrium statistical mechanics. Former graduate students hold now positions as research scientists for data analysis companies or senior research positions at national labs (Lincoln MIT).