SETTLING INTO YOUR RESEARCH GROUP

MEETING YOUR MENTORS & DEFINING YOUR RESEARCH GOALS

MEETING QUESTIONS AND DISCUSSION ITEMS

- Where is your research office/location?

  My research office is located at the Discovery Learning Research Center

- Who are **your mentors**: faculty advisor, post doc, and/or graduate student mentors?
  - State their names

    My faculty advisor is professor Ilias Bilionis and my graduate mentor is Rohit Tripathy

  - State three facts about each of these individuals

    Professor Bilionis is a mathematician, his research is focused on the implementation of methodologies for design and optimization under uncertainty, which is widely applied to many areas in science. He received his PhD from Cornell University in 2013. Rohit has recently started his PhD but he began his research back in his master's degree studies. He also likes soccer and metal music.

  - State one thing that you have in common with your faculty advisor and graduate mentor (other than your research!)

    I personally like mathematics and optimization problems, just as professor Bilionis does. Also, I like a wide variety of metal music genres, just as Rohit does.

- What **laboratory safety training** do you need?
  The project won't require any safety training as I won't do laboratory or experimental work.

- Are there weekly **lab meetings** that you will attend? If so, what is your role?

  The meetings discussed are going to be scheduled based on convenience, as we develop the nanoHub tool required and perform the literature review.

- What forms of **communication** should be used with your faculty advisor and graduate mentor
  Communication is going to be handled through emails and personal meetings will be scheduled by convenience, as the literature review is performed and the final tool is developed.
- How will you communicate your illness or **absences** with your mentor?

  Communication of absence and illness will be handled through emails.

- Lab **access questions**:
  - Do you need access to the lab/office (e.g. keys, card)? If so, when will you begin having access to the lab/office?
    Access to the office is not mandatory, still, access to the DLR building is already configured so that I can come to work before 7:00 a.m and after 5:00 p.m.
  - Are you permitted to be in the lab/office unsupervised?
    I am permitted to work in the office unsupervised
  - Are you permitted to be in the lab/office after hours (e.g. after 5:00pm; on the weekend)

Access to the building out of working hours is already granted

- Discuss **confidentiality** and **intellectual property** ownership as it relates to your project. Give a short summary of what you discussed.
  The final tool for nanoHub is owned by nanoHub and the NCN unless I express any previous commercial interest to create a company with the software created, in that case, the use of core software will still be property of professor Bilionis and his students. For this project, I will not express any commercial interests.

- Discuss the use of a **lab notebook** to document your research progress and ideas, and give a short summary of what you discuss. Does your advisor recommend that you document your research activities in some other way?

  The use of the lab notebook can be an aid in the process of research, still, Rohit expressed that a digital record is more useful. He suggested the use of a word document or a latex document, accompanied by a python notebook for coding results.

- Discuss with your advisor whether or not data management is important for your research project, and if it is important, discuss any data management practices that you're adviser recommends and/or requires that you follow. Give a short summary of what you discussed.

  For this project, data management is not relevant.

- What are the major objectives and deliverables of your summer research project?

  The major objectives for this project are the sufficient understanding of probability theory, optimization, uncertainty quantification, Gaussian processes and other subjects related to the core software that will be used by the tool to be constructed. The main deliverable will be a nanoHub tool for the use of different scientists in their experiments.

- What key documents (internal reports, journal articles, or conference papers) does your advisor/mentor recommend you read to get started on your research?

  My advisor and mentor recommended to read a paper wrote by them in order to familiarize with mathematical concepts needed. Also, they recommended some lectures about a course my advisor gave this past semester. A book about Gaussian processes will also be used and a git repository where python references can be addressed.

SURF RESEARCH PROJECT OBJECTIVES WORKSHEET

Week 1 May 23–27	**SURF Goals:** • Become familiar with the SURF Blackboard site and SURF schedule • Meet with my faculty advisor and graduate mentor • Determine my weekly schedule in the lab • Understand safety in my lab; schedule required safety training • Build my proficiencies in finding information relevant to my project (the literature search)
	Research Goals: Introduction to GPy and Probability Theory, end of week meeting with mentor to discuss concepts
Week 2 May 30– June 3	**SURF Goals:** • Understand the contents of a literature review • Reflect on whether or not I fully understand my project, and obtain any additional information I may need to do so • Complete the initial literature search for my project
	Research Goals: Understanding of Uncertainty Quantification, end of week meeting with mentor to discuss concepts
Week 3 June 6–10	**SURF Goals:** • Write a literature review for my project • Reflect on how I am documenting my work in the lab. From my documentation (e.g. my lab notebook), someone else can reproduce my work and follow my thought process. ***You should completely understand what your project is and its significance/contribution to the field by the end of this week, and have made some progress in your research.***
	Research Goals: Understanding of Bayesian Linear Regressions, end of week meeting with mentor to discuss concepts
Week 4 June 13–17	**SURF Goals:** • Re-evaluate goals for weeks 5–11with my mentors • Reflect on my career goals and get feedback from my mentor/advisor about research careers and graduate school
	Research Goals: Understanding of Gaussian Process Regression, end of week meeting with mentor to discuss concepts

Week 5–11 Schedule:

For week 5, an understanding of Dimensionality Reduction has to be accomplished and the first draft of the abstract has to be developed. For the sixth week, and understanding of Bayesian global optimization has to be accomplished as well as the first draft of the technical paper. From the seventh to the tenth week, the nanoHub tool has to be developed, as well as the poster and oral presentation, final abstract will also be completed. Finally, in week 11 results will be presented.

WEEKLY WORK SCHEDULE

Time	Monday	Tuesday	Wednesday	Thursday	Friday
8:00AM	Literature review	Literature review	Literature review	Literature review	Literature review
9:00AM	SURF Professional Development	Literature review	Literature review	Literature review	Literature review
10:00AM	SURF Professional Development	Literature review	Literature review	Literature review	Literature review
11:00AM	Literature review	Literature review	Literature review	Literature review	Literature review
12:00PM	Lunch	Lunch	Lunch	Lunch	Lunch
1:00PM	Lunch	Lunch	Lunch	Lunch	Lunch
2:00PM	Rappture training	Rappture training	Rappture training	Rappture training	Rappture training
3:00PM	Tool coding	Tool coding	Tool coding	Tool coding	Tool coding
4:00PM	Tool coding	Tool coding (or Research Seminar)	Tool coding	Tool coding (or Research Seminar)	Tool coding
5:00PM	Tool coding	Tool coding (or Research Seminar)	Tool coding	Tool coding (or Research Seminar)	Tool coding
6:00PM	Tool coding	Tool coding	Tool coding	Tool coding	Tool coding