Building Your Career

Industry Internship Projects

Liam Peyton, PhD, Peng
Vice-Dean Graduate Studies
Faculty of Engineering
lpeyton@uottawa.ca
http://www.site.uottawa.ca/~lpeyton
What is a career?

• A series of **projects** in which new **skills** are learned, **experience** is gained in **roles** that develop your **authority** in your area of expertise

• Projects are done in **teams**

• Projects have a **context** and must **integrate with or interface to systems** (processes, technology, information, organizations, legal)

• Projects have a **business purpose** and generate **value**

• Projects have a **focus**
Who are you as a Professional?

• What do you look like?
  • Digital footprint (LinkedIn, GitHub, Social Media, Blogs ...)
  • Resume

• Who are your colleagues?
  • Classmates, co-workers, network
  • How do you stay in touch? ... Facebook / Whatsapp?, Slack / Teams?, Events / Workshops?

• What professional groups are you a member of?
  • Professional Development Club, Student Association, IEEE, Volunteer Organizations ....

• What do you do? (job, roles, contributions)

• What do you know? (skills, specializations, responsibilities)

• How do you know it?
  • Project Experience
  • Education (Academic and Industry)
Match your Resume to your target Job Description

• Contact Information (name, email, phone number, NO ADDRESS)
  • Digital footprint (LinkedIn, GitHub, Social Media, Blogs …)

• Skills
  • What does the job description list (acronyms, technical jargon, concepts)?
  • What do you know? (skills, specializations, responsibilities)

• Experience  ***
  • Project Experience
  • What do you do? (job, roles, contributions, skills, specializations, responsibilities)
  • Network, Events / Workshops, Volunteer Organizations, professional groups

• Education (recognition, awards, certificates, degrees)
  • Industry
  • Academic
How do I find an industry partner … to hire me?

• Do you know what your target industry cluster is?
  • Do you know what websites, conferences, trade journals/magazines the cluster uses to network?
  • Do you know who in your network and who at uOttawa is connected with the cluster?
  • Do you know how you can be active in your target industry cluster?

• Do you know what organizations / companies you are targeting?
  • Better yet do you know which organizations are targeting YOU!?
  • How do they communicate with you? (web presence, events, LinkedIn, Job postings, headhunters career center)
  • What roles / jobs / projects are available at a target organization? How can you research this?

• Do you know what skills and experience they are looking for?
  • How can you acquire them?
  • How do you communicate to your target organization? (web presence, your network, your references, your promoters, resume, interview)

• Why should they hire you?
  • What is your pitch? Why are you the right person for the job/project? What is your value (to them)?
How do I find a Supervisor (mentor, promoter, reference)?

• **Do you know how to meet the right professors?**
  - Courses and Research and their students (program seminars where thesis students present!)
  - Program Associations and Program Coordinators
  - Engineering Events (CEED, Orientation, Bulletin); Ottawa Industry Events
  - **Do your research!** (faculty web pages, google, google scholar)

• **Do you know how to communicate with professors?**
  - In person (when, where) or by email (how should such an email be worded)
  - Do you know how to **efficiently** ask for and get an appointment scheduled?

• **Do you know what professors are interested in?**
  - Do you know what industry clusters, organizations / companies the professor is interested in?
  - Do you know what **skills and experience** they are looking for?
  - Do you have the skills and experience they are looking for?

• **Why should they hire you?**
  - What is your **pitch**? Why **are you the right person** for the job/project? What is your **value** (to them)?
Build experience through projects …

• Projects are simple to find, but challenging to do right, and even harder to follow through to success on.

• A project is much more fun, if you are part of a team, working for a client you are trying to satisfy.

• A project always has a context (what is your context?)
  • what is in scope, what is out of scope
  • interface with existing infrastructure
  • interact with key contacts (people)
  • leverage whatever available tools and knowledge might be useful.
How Do I Find a Project?

- UNIVERSITY COURSES
  - GNG5120, GNG5140 ... any course with projects,

- ONLINE COURSES or INDUSTRY WORKSHOPS

- VOLUNTEER – PROFESSORS
  - CREATE PROJECTS (E.G. www.create-best.com)

- VOLUNTEER – CEED

- NETWORK – Professional Development Club, Sawsan, Mana
  - City of Ottawa (Farzaneh, Patricia, Simardeep, Ajay)
  - University of Ottawa Digital Challenge (Asthā)
  - This years projects: Aedo (Yiling), Siemens (Ephrem Nisrane), NLP (Prof. Arya)
  - Student Associations, Clubs, Womens Innovation Network, Startup Garage ...

- NETWORK – Industry Clusters, Professional Associations
  - www.cengn.ca (Bamdad Mousavi)
  - Contact and invite companies, alumni to do an event or information session
Industry Clusters

• **Data Science / AI**
  - Aedo.ai (Construction Industry – relevant to Civil Engineering as well)
  - Startups and Consulting firms
  - Kanata Business Association

• **Networks and Cloud Computing DevOps**
  - CENGN, Cisco, Kanata

• **City of Ottawa**
  - Mobile, Data Science, Civil, Environmental, Biomedical

• **Biomedical**
  - [www.create-best.com](http://www.create-best.com)

• **Security, Electric / Autonomous Vehicles, Gaming, Oil Industry, HVAC, ...**
How do I define / register to GNG5902?

- ELG / GNG 5902 Industry Internship Project needs an approved proposal
- [https://www.site.uottawa.ca/~lpeyton/gradproject/](https://www.site.uottawa.ca/~lpeyton/gradproject/) Can be used for ELG / GNG5902 or Discipline Specific Project Code or to plan any project ....
  - Proposal
  - Industry Partner
  - Supervisor
  - ELG / GNG 5902 Projects Coordinator
  - Program Approval (Service Request)
What is a project?

• A project can be an organized attempt to engineer a solution to a problem

• A project can be a creative approach to improving user experience
  • Design thinking: https://www.interaction-design.org/literature/topics/design-thinking

• A project can also be a systematic approach to researching the literature, collecting data, comparing cases to identify and evaluate possible solutions
What is a successful project?

• Value proposition
  • What benefits will your project provide to who and how will you achieve it ... and how will you demonstrate / measure that you have achieved it
  • Define, Evaluate, Measure, Build
    https://www.forbes.com/sites/michaelskok/2013/06/14/4-steps-to-building-a-compelling-value-proposition/#57b6c1214695

• Minimum Viable Product
  • Minimum set of features, or the essential functionality that a product needs to provide to be useful to customers; to get feedback for the next iteration.
  • The essential feature(s) that guarantee success if present, failure if absent
    https://medium.com/@sprocompany/what-is-a-minimum-viable-product-and-how-to-build-an-mvp-for-your-startup-9a02c0d4a56a

• Evaluation Criteria
  • What are the criteria for success? How will they be measured?
How Do I plan the project?

• **Duration and Effort**
  - Target Minimum 240 hours ... max 360
  - Usually 1 semester - 12 weeks @20 hours a week (university budgets that students spend 10 hours per week for a 3 unit course) ... but could be 24 weeks @ 10 hours a week, could be 6 weeks @ 40 hours a week. **Be clear.**

• **Specify Expected Results**
  - Define what you need to deliver at the end of the project to satisfy your client.
  - Define how it will be evaluated and progress tracked. Deliverables (intermediate and final results) and Grading Scheme.

• **Define a Week by Week Schedule**
  - Work backwards from the end result and list week by week what tasks will be performed or what milestones (intermediate results) will be achieved
  - Track your progress week by week throughout the project (an update schedule to keep it real).
How am I evaluated

• Your Supervising Professor is responsible for informing me or the graduate office of your final grade
  • Depending on the project each Deliverable that was identified in the Project Proposal could be evaluated by either the industry partner or the supervisor.
  • EXCEPT there must be a project report worth 30-60% of the final grade that is graded by the Professor
  • And there must be an internship evaluation form that is worth 10-30% that is filled in by the Industry partner

• Projects can be done by a team of students
  • Each student has a separate project proposal that clearly identifies their role on the project, and what part of the project they do entirely on their own.
  • Each student does their own project report and has their own internship evaluation
  • But their can be common parts of the project infrastructure (and intermediate deliverables) that are a group effort and a group mark.

• NOTE: Individual projects also specify their “team” (key contacts they interact with), as well as identify the tools and resources and existing infrastructure that is part of the project context.