Preparing for a career after university

Asad Prodhan

BSc Ag (Hons) MS *BAU* MSc *Sydney* PhD *W. Australia* JSPS Fellow *Japan*

Passion can take you anywhere … it's magical

2010

2023

Empowerment promise

- How do I become a competitive candidate?

- What skills do I need?

- How do I achieve these skills?

- How do I find right opportunities?

Empowerment promise

- **How do I become a competitive candidate?**

- What skills do I need?

- How do I achieve these skills?

- How do I find right opportunities?

How do I become a competitive candidate?

Former
PhD
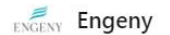Students

How do I become a competitive candidate?

Full-fledged Professionals

Hasnein Tareque (He/Him) · 1st

BHP

Senior Data Scientist at BHP: Data Mining, Remote Sensing, Machine Learning and Geospatial Intelligence

Dr. Muhammad Shafiqul Alam

Engeny

· 2nd

Principal Engineer & WA Discipline Leader - Flood, Stormwater & Waterway Management

Muhammad Shazzad Hossain ·

2nd

Professor at The University of Western Australia

Dr Sarik Salim · 2nd

City of Perth

Principal Engineer - Infrastructure & Operations Alliance

Asad PRODHAN (He/Him)

Department of Primary Industries & Regional Development (DPIRD)

The University of Western Australia

Laboratory Scientist. Work on genomics, transcriptomics, bioinformatics, & biosecurity. Skilled in R, Python, Bash, Nextflow, Singularity Container and Supercomputing (details at asadprodhan.github.io)

Greater Perth Area · Contact info

Bioinformatics Tutorials

How do I become a competitive candidate?

PhD ⟶ Profession

How do I become a competitive candidate?

PhD → Profession

Goal — *which job to land on*

Roadmap — *what skills needed to get there*

Execution — *work hard to achieve those skills*

How do I become a competitive candidate?

PhD   ➡️   Profession

Not enough {

Goal   *which job to land on*

Roadmap   *what skills needed to get there*

Execution   *work hard to achieve those skills*

How do I become a competitive candidate?

PhD   ➡   Profession
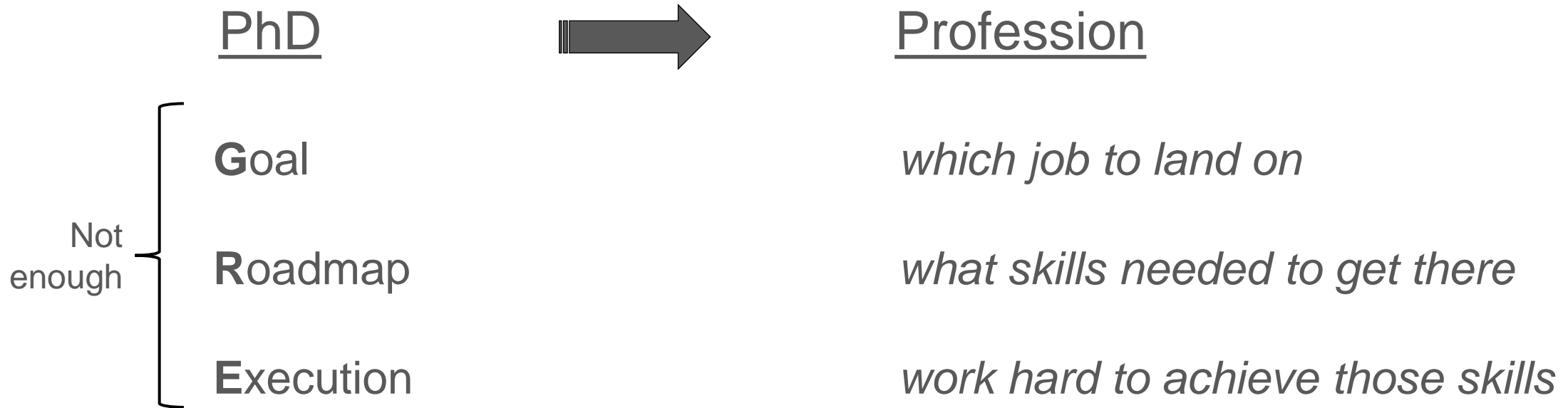
Not enough {

Goal   *which job to land on*

Roadmap   *what skills needed to get there*

Execution   *work hard to achieve those skills*

A hypothetical example

43 Universities X 50 PhDs
X 1 year
=2150 PhDs

An ultra-competition

How do I become a competitive candidate?

PhD ➡️ Profession

Not enough {

Goal — *which job to land on*

Roadmap — *what skills needed to get there*

Execution — *work hard to achieve those skills*

Amplification — *let others know your skillset*

Teaming up — *connect to peers*

How do I become a competitive candidate?

PhD ➡️ Profession

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Roadmap — *what skills needed to get there*

Execution — *work hard to achieve those skills*

Amplification — *let others know your skillset*

Teaming up — *connect to peers*

A GREAT strategy — *will make you competitive*

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GREAT

Empowerment promise

- How do I become a competitive candidate?

- **What skills do I need?**

- How do I achieve these skills?

- How do I find right opportunities?

What skills do I need?

- Search your desired job in seek and indeed

- Read the selection criteria

What skills do I need?

WESTERN SYDNEY
UNIVERSITY

POSITION DESCRIPTION

Position Title:	Postdoctoral Research Fellow in Soil Microbial Ecology and Ecosystem Functions
Position Number(s):	7013074
Classification:	Academic Level A
Supervisor:	Distinguished Professor (7004290)
School/Office:	Hawkesbury Institute for the Environment
Division:	Research, Enterprise and International

QUALIFICATIONS, EXPERIENCE AND SKILLS

1. A PhD degree or equivalent professional experience (e.g. progress towards the formal submission of or recently submitted PhD thesis for examination) in a research field related to soil microbial ecology and ecosystem functions.

2. Demonstrated knowledge and experience in microbiome research, including modelling and mapping approaches to upscale findings at ecosystem and global scales.

3. Demonstrated knowledge and experience in undertaking soil and ecosystem functions and microbiome data analyses.

4. Strong statistical and modelling knowledge with demonstrated experience using relevant statistical platforms including statistical modelling, demonstrated proficiency in data management and reproducible research.

5. Demonstrated ability to write manuscripts for publication in internationally recognised scientific journals, and a track-record of publications appropriate for the applicant's career stage.

6. Demonstrated organisational skills and excellent communication and interpersonal skills, including the ability to be self-directed, but also to work effectively and harmoniously as part of a research team.

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What skills do I need?

Postdoctoral Research Fellow ecology

The University of Queensland
AUSTRALIA
CREATE CHANGE

About You

- Completion or near completion of PhD in evolutionary ecology, quantitative behavioural ecology, or related area.
- Experience and skills in coding and running analyses in R, and quantitative modelling to address scientific questions in evolution.
- Broad background knowledge of vertebrate, arthropod, and plant biology.
- Evidence of ability to coordinate research project logistics, conduct research using museum collections, curate databases, and communicate effectively with team leaders and collaborators.
- Track record of publication of research findings in high-quality peer reviewed journals and conferences
- Ability to work to deadlines both independently and in a team, and an ability to liaise with supporting staff.
- High level of personal integrity, transparency, and capability.

What skills do I need?

- Search your desired job in seek and indeed

- Read the selection criteria

- List the skills that they are looking for

What skills do I need?

- Search your desired job in seek and indeed

- Read the selection criteria

- List the skills that they are looking for

Specialised skills
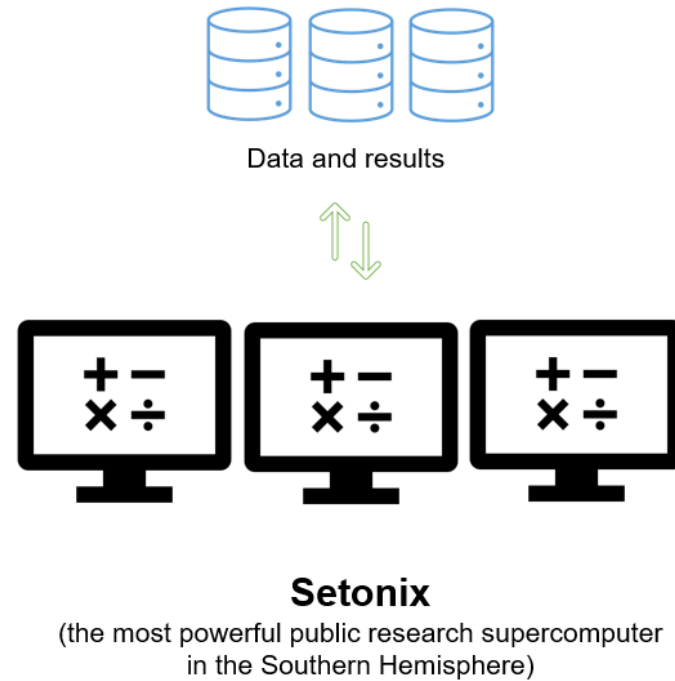Publications
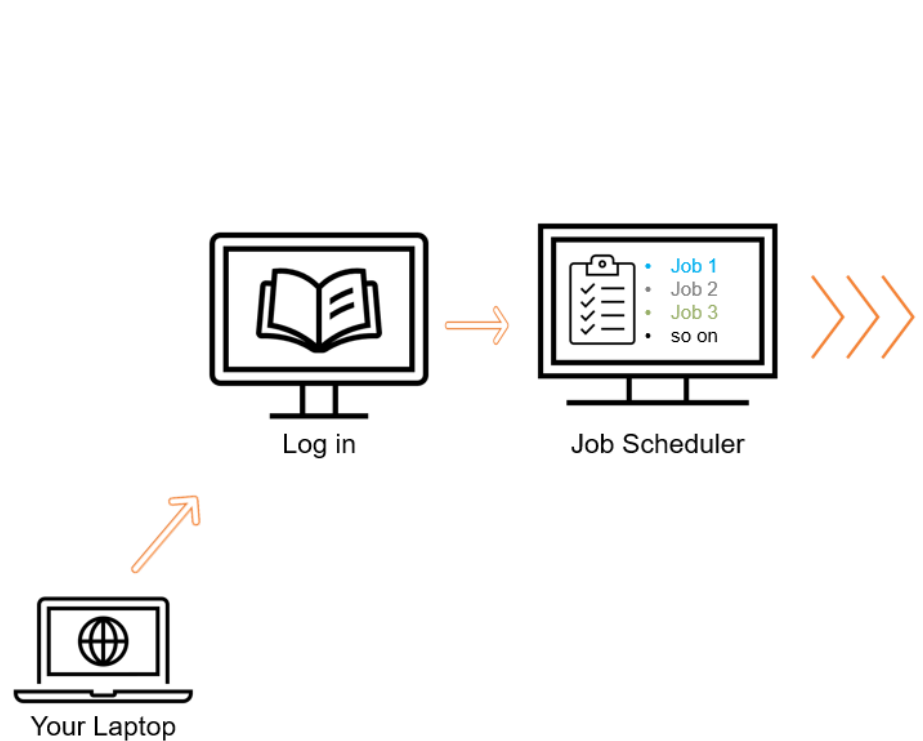A competitive CV

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Specialised skills
Publications
A competitive CV

Empowerment promise

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How do I achieve these skills?

Log in

Job Scheduler

Job 1
Job 2
Job 3
so on

Your Laptop

Data and results

Setonix
(the most powerful public research supercomputer
in the Southern Hemisphere)

Specialised skills
Publications
A competitive CV

Asad PRODHAN (He/Him)
Laboratory Scientist. Work on genomics,
transcriptomics, bioinformatics, & biosecurity.
Skilled in R, Python, Bash, Nextflow, Singularity
Container and Supercomputing (details at
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Bioinformatics Tutorials

Department of Primary
Industries & Regional
Development (DPIRD)

The University of Western
Australia

How do I achieve these skills?

Specialised skills
Publications
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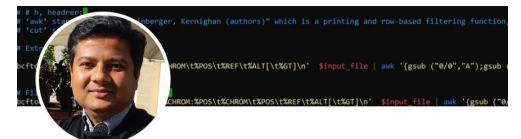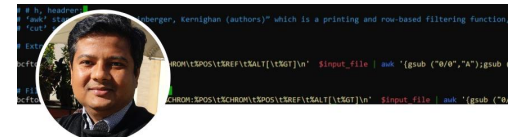
How do I achieve these skills?

How to write your CV?

https://grad.illinois.edu/sites/default/files/pdfs/cvsamples.pdf
https://careerservices.upenn.edu/application-materials-for-the-faculty-job-search/cvs-for-faculty-job-applications/

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Publications
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Department of Primary Industries & Regional Development (DPIRD)

The University of Western Australia

Philipp **Bayer**

RESEARCH OFFICER, AI

OceanOmics, Minderoo Foundation

✉ pbayer@minderoo.org | 🔗 philippbayer | 💼 philippbayer | 🐦 philippbayer

About me

I work at the intersection of genomics, data science, machine learning and AI, high-performance computing, teaching, and environmental science, drawing on more than a decade of experience at the cutting edge of genomics to push what is possible in environmental and DNA data analysis. I have co-supervised more than twenty PhD and MSc students to completion and am now focusing on building a team of AI experts in eDNA.

Education

2012 to 2016
PhD, University of Queensland, Brisbane, Australia
Applied bioinformatics PhD in the Edwards group. Developed computational pipeline SkimGBS for higher resolution genotyping. Worked extensively with industry (Bayer CropScience/BASF).

2010 to 2012
Master of IT, Bond University, Gold Coast, Australia
Focused on coding and business IT. 5x Top of class, 3x Vice-Chancellor List of Academic Excellence, 1x IT Award Academic Excellence. Graduated with High Distinction. John Oglethorpe Medal for highest GPA of all IT students graduating.

2006 to 2009
Bachelor of Life Sciences, University of Muenster, Muenster, Germany
Studied general life sciences with a focus on microbiology. In my final project I worked on EST-based differential gene expression in seagrasses.

Employment

2022 to current
Research Officer, AI
I lead interpretable AI efforts using genomics and flow cytometry data from WA to assess ocean health.

2021 to 2022
DECRA Fellow
I used interpretable AI to study mechanisms of gene loss and birth in crops to learn where new genes come from, and how to avoid loss of agronomically important genes. Co-developed a new MSc in Bioinformatics, designed and taught two units.

2017 to 2020
Forrest Fellow
One of three inaugural Forrest Fellows. Worked on genomics of complex plants with Forrest Foundation support. Taught one bioinformatics unit.

2015 to 2017
Postdoctoral researcher
Researched genetics of complex plants with a focus on canola and wheat in Edwards lab.

Recent roles

2023
Founder, WA eDNA meetup
Irregular meetup to connect eDNA practitioners in Western Australia

2022
Member, Scientific Advisory Panel
Oversee and advise on ongoing industry data collaborations across WA.

2022
Founding member
Co-founder and lead of teaching.

2021
Member, Scientific Advisory Panel Machine Learning
Advise on ongoing machine learning projects supported by the ARDC.

2021
Member, GRDC Machine Learning Technical Consultation Group (ML TCG),
Member of the ML technical consultation group for GRDC-funded ML projects.

2017
Hacky Hour Founder
Founded a weekly get-together of researchers and staff working with programming and data, doubles as a help-desk for students with programming problems.

2013
Certified Carpentries Instructor
Certified Software Carpentry and Data Carpentry instructor

Recent presentations

2023	**Perth Machine Learning Group** - Unlocking the power of large language models	
2023	**WA Data Science Innovation Hub (WADSIH)** - My journey towards data skills	
2022	**ResBaz/Perth Machine Learning Group** - Ask us anything - Advice on how to use machine learning to tackle your project	
2022	**Telethon Kids Institute** - Career Pathways Event - how I got here	
2022	**ResBaz** - Bioinformatics showcase	
2021	**CCDM/Curtin University** - Machine learning in bioinformatics – where are we and what's next?	
2021	**Cinvestav/online** - Machine learning in plant breeding and bioinformatics	
2021	**UWA DVCR Forrest Fellow series** - Future-ready crops for a changing climate: the role of bioinformatics	
2021	**Pawsey Supercomputing Centre** - Bioinformatics at scale Q and A	
2021	**ABACBS online seminars** - Interpretable Machine Learning in Bioinformatics	
2020	**GRDC Tech Seminars** - Our machine learning technical stack	
2020	**PAG Conference, San Diego** - Predicting Gene Loss in Plants: Lessons Learned from Laptop-Scale Data	
2019	**Bayliss Seminar Series** - Eukaryotic pangenomics: where we've been, where we're going	
2019	**AGRF Seminar Series** - Assembling complex plant genomes – things I wish someone would have told me earlier	
2019	**PAG Conference, San Diego** - Helping Biologists Make Sense of Plant Variant and Annotation Data	

Academic funding

2020
Grant: ARC Discovery Early Career Research Award
Awarded DECRA for 2021-2023. Total funding $866k which includes a $419k contribution from UWA.

2020
Grant: Identifying genetic contributors to canola blackleg resistance in the presence of environmental effects using Machine Learnin
With Prof. Dave Edwards, Prof. Mohammed Bennamoun, Prof. Farid Boussaid, Prof. Jacqueline Batley. Total funding: AUSD 309,524.

2020
Grant: Machine Learning - Project E: Deep Learning for early detection and classification of crop disease and stress
With Prof. Mohammed Bennamoun, Prof. Farid Boussaid, Prof. Dave Edwards, Dr. Nic Taylor. Total funding: AUSD 344,971.

Relevant publications

1. **Danilevicz** *et al.* (2022). DNABERT-based explainable lncRNA identification in plant genome assemblies. *bioRxiv*, *NA*, NA:NA.

2. **Gill** *et al.* (2022). Machine learning models outperform deep learning models, provide interpretation and facilitate feature selection for soybean trait prediction. *BMC plant biology*, *22*, 1:1–8.

3. **Bayer** *et al.* (2021). Sequencing the USDA core soybean collection reveals gene loss during domestication and breeding. *The Plant Genome (TSI)*, *NA*, NA:1–12.

4. **Bayer** *et al.* (2021). Yield is negatively correlated with nucleotide-binding leucine-rich repeat gene content in soybean. *bioRxiv*, *NA*, NA:NA.

5. **Bayer** *et al.* (2021). Modelling of gene loss propensity in the pangenomes of three Brassica species suggests different mechanisms between polyploids and diploids. *Plant biotechnology journal*, *19*, 12:2488–2500.

6. **Bayer** *et al.* (2020). Plant pan-genomes are the new reference. *Nature plants*, *6*, 8:914–920.

7. **Valliyodan** *et al.* (2019). Construction and comparison of three reference-quality genome assemblies for soybean. *The Plant Journal*, *100*, 5:1066–1082.

8. **Appels** *et al.* (2018). Shifting the limits in wheat research and breeding using a fully annotated reference genome. *Science*, *361*, 6403:NA.

9. **Montenegro** *et al.* (2017). The pangenome of hexaploid bread wheat. *The Plant Journal*, *90*, 5:1007–1013.

10. **Golicz** *et al.* (2016). The pangenome of an agronomically important crop plant Brassica oleracea. *Nature Communications*, *7*, 1:1–8.

11. **Chalhoub** *et al.* (2014). Early allopolyploid evolution in the post-Neolithic Brassica napus oilseed genome. *science*, *345*, 6199:950–953.

JUAN GARCIA

(217) 123 - 4567 • jgarcia@illinois.edu

EDUCATION

Doctor of Philosophy in Civil and Environmental Engineering   Expected Fall 20XX
University of Illinois at Urbana-Champaign
    Dissertation title: "Visualizing Geotechnical Engineering Principles"
    Advisor: Professor Ted S. Visor

Bachelor of Science in Civil Engineering   May 20XX
Universidad Nacional de San Juan, San Juan, Argentina (UNSJ)

RESEARCH INTERESTS

Investigations to improve seismic force-resisting systems through simulations and various visualization techniques.

RESEARCH EXPERIENCE

Graduate Research Assistant   20XX - Present
Department of Civil Engineering, University of Illinois
- Design and execute small-scale testing to validate control algorithms derived to simulate seismic force-resistance.
- Contribute to multi-disciplinary project aimed at developing visualizations and simulations to predict seismic force damage to various materials.
- Collaborate and coordinate with faculty, staff scientists, and fellow graduate students across departments.

Undergraduate Consultant   20XX
Departamento de Ingeniería, UNSJ
- Selected by the General Director of the City Planning Department of San Juan, to participate in the structural analysis and seismic assessment of the Dr. Guillermo Rawson Hospital, one of the largest construction projects to date in the most hazardous seismic area in Argentina.
- Collaborated with two other members of a team to carry out a nonlinear static analysis of the structure – primary objective and main focus of the project - in agreement with FEMA 356 Pre-standard for the Seismic Rehabilitation of buildings.

TEACHING AND MENTORING EXPERIENCE

Teaching Assistant, Introduction to Structural Engineering   Spring 20XX - Present
College of Engineering, University of Illinois
- Prepared lectures and class activities focusing on the analysis of determinate and indeterminate structures for 15-25 freshman and sophomore level undergraduates.
- Created and graded course assessments to ensure students understood material and stayed on track.
- Recognized as *List of Teachers Ranked Excellent by Their Students.*

Instructor, Latino/a Culture   Spring - Fall 20XX
Anthropology Department, University of Illinois
- Integrated multimedia approaches and used instructional technology to enhance pedagogical approach.
- Explained challenging concepts using planned lessons, assignments and targeted discussions for 75 freshmen and sophomore students.

Graduate Mentor, Illinois Summer Research Opportunities Program   Summer 20XX, 20XX
The Graduate College, University of Illinois
- Mentored two undergraduate students in data collection and analysis to visualize the properties of various geotechnical materials.
- Guided the students in preparation and presentation of research findings.

Graduate Mentor, Illinois Summer Research Opportunities Program   Summer 20XX, 20XX
The Graduate College, University of Illinois
- Mentored two undergraduate students in data collection and analysis to visualize the properties of various geotechnical materials.
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HONORS AND AWARDS

Fulbright Scholarship to pursue a PhD   20XX
- 20 scholarships awarded in Argentina that year

Flag Honor Guard Member   20XX
- Qualified by graduating with honors and ranking 4th among engineering majors at UNSJ

GRANTS

Granting Agency, "Title of Grant", $00,000   20XX - 20XX

PUBLICATIONS

Garcia, J., other authors. (Year). Title. *Journal, Volume (Issue)*, page numbers. doi:.

Garcia, J., other authors. (in press). Title. *Journal, Volume (Issue)*, page numbers.

Garcia, J., other authors. (Year produced). Title. Manuscript submitted for publication.

Garcia, J., other authors. (Year draft produced). Title. Manuscript in preparation.

CONFERENCE PRESENTATIONS

ORAL PRESENTATIONS

    Garcia, J., other authors. (Year, Month). *Title*. Minisymposium on subject, Meeting, City, State.

    Garcia, J., other authors. (Year, Month). *Title*. Meeting, City, State.

POSTER PRESENTATIONS

    Garcia, J., other authors. (Year, Month). Title. Poster session presented at Meeting, City, State.

    Garcia, J., other authors. (Year, Month). Title. Paper presented at Meeting, City, State.

PROFESSIONAL EXPERIENCE

Civil Engineer at consulting firm   20XX - 20XX
TOSS Ingeniería, La Paz, Peru
- Engineer in charge of the implementation of seismic validation at La Paz Central hospital.
- Developed extensive modeling and visualization algorithms to expedite validation.

UNIVERSITY SERVICE

Facilitator   July 20XX
College of Engineering, University of Illinois
- Participated in the organization of the Principal's Scholars Program 20XX GEAR UP College Bound Summer Program, where a group of minority children from elementary and middle school visited the college to learn about different paths in engineering.
- Prepared a bridge design competition using popsicle sticks and glue, where the children demonstrated their skills and their creativity.

Student Assistant   July 20XX
Office of International Student and Scholar Services (ISSS), University of Illinois
- Assisted with check-in procedures for incoming international students.
- Helped incoming international students with information on procedures and resources for their successful arrival on campus.

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Be proactive
Find resources

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How do I find right opportunities?

- When I solve a problem, I write a tutorial

- When I complete an expt, I write a paper

- I post on LinkedIn, Twitter, ResearchGate, GitHub etc

- I get three benefits:

  i.   I learn better

  ii.   others know my specialisation & connect

  iii. this network helps finding the right opportunity

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Network
and
Network

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BHP   BHP

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ENGENY   Engeny

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Department of Primary Industries & Regional Development (DPIRD)
The University of Western Australia

GREAT