

JOY RAMIELLE L. SANTOS

GRADUATE STUDENT, MECHANICAL ENGINEER-IN-TRAINING (EIT), BSc, BEng

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SUMMARY

Graduate researcher looking to leverage my academic credentials, professional work experience and passion for knowledge in the field of research and academia. More than two years professional experience in a dynamic industry performing engineering design, and complex problem solving. I have a strong work ethic and am known for excellent interpersonal skills, analytical skills, and a high technological aptitude. Looking to gain valuable teaching experience to improve my knowledge translation skills.

ACADEMIC CREDENTIALS

DOCTOR OF PHILOSOPHY IN MEDICINE (THESIS-BASED) – In Progress – (Anticipated: Class of 2026)
UNIVERSITY OF ALBERTA, EDMONTON, AB

BACHELOR OF ENGINEERING IN MECHANICAL ENGINEERING – First Class Standing, GPA: 4.0 – (CLASS of 2018)
LAKEHEAD UNIVERSITY, THUNDER BAY, ON

DIPLOMA IN MECHANICAL ENGINEERING TECHNOLOGY – With Distinction, GPA: 4.0 – (CLASS of 2016)
NORTHERN ALBERTA INSTITUTE OF TECHNOLOGY (NAIT), EDMONTON, AB

BACHELOR OF SCIENCE IN BIOLOGICAL SCIENCES, MINOR IN PSYCHOLOGY – (CLASS of 2014)
UNIVERSITY OF ALBERTA, EDMONTON, AB

PROFESSIONAL EXPERIENCE

INSTRUCTOR - (JANUARY 2022 PRESENT)

MECHANICAL ENGINEERING DEPARTMENT – NORTHERN ALBERTA INSTITUTE OF TECHNOLOGY, EDMONTON, AB

- Taught design fundamentals, project management, and engineering cost estimating in the Mechanical Engineering Technology Program.
- Created course material that adhered to the objectives laid out by the department while simultaneously enriching the curriculum with diverse, real-world examples from multiple industries and work environments.
- Re-designed and developed a new cost estimating curriculum that more closely aligns with industry and student needs.
- Received multiple positive student evaluations regarding my teaching style and approach to academics.

GRADUATE RESEARCH ASSISTANT - (APRIL 2021 to PRESENT)

MARCET-BEFUS GROUP of the ALBERTA RESPIRATORY CENTRE – UNIVERSITY OF ALBERTA, EDMONTON, AB

- Worked as part of a cross-disciplinary team to characterize and possibly identify potential clinical implications of a novel protein found in human serum and saliva.
- Specialized in computational and bioinformatic techniques to solve research problems.
- Collaborated across multiple research groups and departments to improve upon data presentation, lab protocols and techniques. Served as general meeting chair on a bi-monthly basis alongside other students in group.
- Aided, alongside PhD candidate and supervisors, in the mentorship of 5 undergraduate students on lab specifications and best practices both in physical laboratory and *in silico*.

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CO-FOUNDER / DESIGN CONSULTANT – (FEBRUARY 2020 to PRESENT)

THE WEDDING BELLES – EDMONTON CERTIFIED WEDDING / EVENT PLANNERS & CONSULTING, EDMONTON, AB

- Launched, licensed, and registered a new business. Developed all necessary contracts and policies.
- Coordinated with clients to determine proper budgets and managed all other needs for their events.
- Ensured cohesive event design with themes by collaborating with multiple vendors locally to achieve a client's vision.
- Designed and implemented new brand identities for local businesses and non-profits, including graphic design and a user-experience (UX) based web design.
- Managed multiple social media outlets, website and search engine optimization (SEO) for marketing and brand exposure, generating new leads for the growth of business.

NEXTGEN ENGINEER - (JUNE 2018 to OCTOBER 2020)

WEATHERFORD DRILLING SERVICES CANADA, NISKU, AB

- Inspected, repaired, and maintained over \$27.5 million in physical assets.
- Liaised between motor shop, coordinators, contractors, laboratory technicians, vendors, and management to ensure the highest standard of quality was met during the repair, inspection / maintenance, servicing, and release of assets.
- Mentored 2 technologist interns on company specifications and best practices for productivity and safety, promoting problem solving skills and critical thinking.
- Analyzed logged data and cooperatively diagnosed over 20 failed tool strings alongside failure analysis engineer, saving the company more than \$4 million in chargebacks.
- Assisted senior engineer and lead lab technologists by overseeing 10 lab tests / quality control inspections daily.
- Reviewed plant / equipment layouts for optimum motor shop and work bay configuration, increasing efficiency in tool assembly, processes, and transportation.

FRANCHISE PARTNER / SUPERVISOR – (MAY 2011 to April 2021)

JUGO JUICE, EDMONTON, AB

- Developed all necessary training / operation manuals for new franchise locations, facilitating the training of 10 new franchise partners based in the Edmonton and Calgary area. Oversaw the construction of 2 downtown locations.
- Handled store logistics, including the accounting of \$36 000 in monthly sales, scheduling, and employee records.

PHARMACY ASSISTANT / SUPERVISOR – (APRIL 2013 to MAY 2018)

SHOPPERS DRUG MART, AB & ON

- Compounded medications with specific concentrations for patient use.
- Trained 3 new pharmacy assistants to provide outstanding service by writing custom departmental procedures.
- Established rapport with customers, and medical professionals, increasing customer base by 65%.

RESEARCH AND DEVELOPMENT PROJECTS

BIOINFORMATIC APPROACHES TO ELUCIDATE DNA STRUCTURE – (PRESENT)

UNIVERSITY OF ALBERTA – DOCTOR OF PHILOSOPHY

- Collaborated with industry and a student in the Computational Sciences Department at the University of Alberta to create a novel software to study similarities in upstream gene regions (UGRs)
- Participated in Poster Presentations to present new research and findings.

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CHARACTERIZATION OF THE NOVEL *hCABS1* PROTEIN – (APRIL 2021 to PRESENT)

UNIVERSITY OF ALBERTA – MASTER OF SCIENCE IN MEDICINE (TRANSITIONED TO PhD)

- Worked under the supervision of Eduardo Reyes-Serratos (Now Dr. Reyes-Serratos), Dr. Marcelo Marcet and Dr. Dean Befus in characterizing a novel protein previously studied in rats.
- Conducted various protocols in a laboratory setting such as: SDS-PAGE, Western Blot and Gel Staining.
- Collaborated with both local and international teams to further develop research.
- Utilized both polyclonal and monoclonal antibodies as part of research project.

ALL-ATOM SIMULATION AND VISUALIZATION OF VIRUS PARTICLES – (JANUARY 2021 to PRESENT)

- Challenged existing models of HIV-1 virus using All-Atom-Simulation.
- Utilized 3D Modelling techniques combined with PyMOL to create easy-to-understand models of the HIV-1 virus *in silico*.
- Proposed a new mechanism of viral entry based on the modelled research of the virus shell superstructure.

MATHEMATICAL DETERMINATION OF THE HIV-1 MATRIX – (OCTOBER 2015 to NOVEMBER 2019)

- Conceptualized with lead researcher, Dr. Marcelo Marcet, to use mathematical formulas to determine the structure of the HIV-1 Matrix. Aided in the editing of final manuscript and abstract.
- Attempted to digitally render the structure of HIV using Python, PyMOL and computer-aided modelling software.

MARBA – MOTION ACTIVATED ROBOTIC ARM – (SEPTEMBER 2017 to APRIL 2018)

LAKEHEAD UNIVERSITY CAPSTONE RESEARCH AND DEVELOPMENT PROJECT

- Fundraised over \$2000 for the development of a motion activated robotic arm to improve the quality of life and independence of those who suffer from mobility restrictions or disabilities.
- Designed and fabricated a robotic arm from scratch to address current issues of assistive robotic arm technology.
- Wrote a custom Arduino based program for the arm that was successfully demonstrated on a prototype.

NOVEL PROTEIN TRACKING SYSTEM – (MAY 2015 to SEPTEMBER 2015)

NORTHERN ALBERTA INSTITUTE OF TECHNOLOGY (TEAM IM-Ag-INE for iGEM 2015)

- Assisted a team of five peer students in a lab setting to develop a novel protein tracking system (SDS-PAGE).
- Developed team identity as well as “Team Wiki” (website) to present results and information on the World Wide Web.
- Rendered atomically accurate 3D animations and visualizations of the research for the competition presentation against 268 teams in the International Genetically Engineered Machine Competition in Boston, MA.

HONOURS & AWARDS

75th ANNIVERSARY GRADUATE STUDENT AWARD – Recipient – (January 2023)

- Awarded based on my academic excellence and research achievements.

ALBERTA GRADUATE EXCELLENCE SCHOLARSHIP – Recipient – (September 2022)

- Recognized for my outstanding academic achievement in graduate studies.

MICHELLE HARKNESS MENTORSHIP AWARD (CATEGORY 3) – Recipient – (March 2022)

- Awarded to future mentors-in-training based on their mentorship activity proposal and mentorship potential.
- Attended the Women in STEM Leadership Summit, June 2022, and earned a micro-credential in Team Leadership.
- Launched a new student run initiative, [The STEAM Room](#), to foster community and knowledge dissemination.

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ALEXANDER GRAHAM BELL CANADA GRADUATE SCHOLARSHIP (NSERC CGS-M) – Recipient – (April 2021)

- Awarded the Natural Sciences and Engineering Research Council of Canada's (NSERC) Canada Graduate Students – Masters Program studentship. Recipients are high-calibre scholars who demonstrate a high standard of achievement and first-class average in the last two years of completed study.

WALTER H. JOHNS GRADUATE FELLOWSHIP – Recipient – (April 2021)

- Awarded as a top-up scholarship based on success in the CGS-M Competition.

1st PLACE – Co-Recipient – (DECEMBER 2017)

- Won 1st Place in Engineering Communications at the Lakehead Engineering Competition, an annual University-wide opportunity to showcase superior technical communication skills by clearly and concisely presenting on a technical topic in front of a combined technical and non-technical judging panel.

ELECTED AS CSME CHAPTER PRESIDENT – (APRIL 2017)

- President at the Canadian Society for Mechanical Engineering Lakehead University Student Chapter.
- Implemented a new, web-based resource centre for students, effectively increasing chapter involvement by 150%.

THE WALDERMAN KLEMENS MEMORIAL SCHOLARSHIP – Recipient – (DECEMBER 2017)

- Granted based on academic excellence for a student in Mechanical Engineering.

THE JACKSON POWER TECHNICAL AWARD – Recipient – (DECEMBER 2015)

- Awarded for demonstrated leadership qualities, community involvement and academic achievement.

DUNCAN AND VERDA McNEILL SCHOLARSHIP – Recipient – (NOVEMBER 2015)

- Acknowledged superior academic achievement and documented proof of participation in the institution's community and volunteer work.

NAIT'S AWARD OF EXCELLENCE – Recipient – (NOVEMBER 2015)

- Awarded for being the first NAIT team to compete at the International Genetically Engineered Machine (iGEM) competition in Boston, MA.

ALBERTA INNOVATES TECHNOLOGY FUTURES geekSTARTER GRANT – Recipient – (SEPTEMBER 2015)

- Granted to support participation in the iGEM 2015 competition where team was awarded a Silver Medal for our research and presentation.

MASTER FLO VALVE INC. ACHIEVEMENT AWARD – Recipient – (APRIL 2015)

- Awarded for excellent work ethic and academic achievement as well as the demonstrated ability and willingness to assist fellow students and work well with instructors.

CONFERENCES & PRESENTATIONS

CO-PRESENTER OF DESIGN PROJECT AT THE ONTARIO ENGINEERING COMPETITION – (FEBRUARY 2018)

- McChesney, D., Santos, J. R. L., Vandal, J., Derksen, R. (2018) MARBA – Motion Activated Robotic Arm for the Mobility Impaired. *Ontario Engineering Competition 2018*. Ottawa, ON.

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LECTURER FOR GO ENG GIRL (ONTARIO NETWORK OF WOMEN IN ENGINEERING) – (NOVEMBER 2017)

- Santos, J. R. L. – The Importance of 3D Modelling and Visualizations in Engineering. *Go Eng Girl! In Association with Lakehead University and the Ontario Network of Women in Engineering*. Thunder Bay, ON.

RESEARCHER / PARTICIPANT OF A PROJECT IN THE IGEN 2015 GIANT JAMBOREE – (SEPTEMBER 2015)

- Eduardo A. R. Serratos, Joy Ramielle L. Santos, David Barilla, Johannes Coomansingh, Abbie E. Gottert, Kevin Setzer, Mattéa Bujold & Marcelo Marcet-Palacios. (2015). Development and Characterization of Protein Motifs to Generate Colour upon Interaction with Silver Staining Agents. 2015 iGEM Giant Jamboree. Boston, MA.

PEER REVIEWED PUBLICATIONS

Kulka, M., Wagner, A., Cho, J. Y., Alam, S. B., **Santos, J. R.**, Jovel, J., ... & Marcet-Palacios, M. (2023). Agarose/crystalline nanocellulose (CNC) composites promote bone marrow-derived mast cell integrity, degranulation and receptor expression but inhibit production of de novo synthesized mediators. *Frontiers in Bioengineering and Biotechnology*, 11.

Mangukia, T. A., **Santos, J. R. L.**, Sun, W., Cesarz, D., Ortíz Hidalgo, C. D., & Marcet-Palacios, M. (2023). Validation of HIV-1 MA Shell Structural Arrangements and Env Protein Interactions Predict a Role of the MA Shell in Viral Maturation. *Viruses*, 15(4), 893.

Santos, J. R. L., Sun, W., Mangukia, T. A., Reyes-Serratos, E., & Marcet-Palacios, M. (2021). Challenging the Existing Model of the Hexameric HIV-1 Gag Lattice and MA Shell Superstructure: Implications for Viral Entry. *Viruses*, 13(8), 1515.

Sun, W., Reyes-Serratos, E., Barilla, D., **Santos, J. R. L.**, Bujold, M., Graves, S., & Marcet-Palacios, M. (2019). Mathematical determination of the HIV-1 matrix shell structure and its impact on the biology of HIV-1. *PloS one*, 14(11), e0224965.

PROFICIENCIES

Research & Design: Adequate experience with genetic engineering, western blot, chromatography, spectroscopy, thermal analysis, and testing. Expert in technical research / sourcing, technical work instructions and protocols, technical reports / documentation, design and validation, statistical analysis.

Engineering: Fluent in Mechanical Engineering Concepts and Principles including GD&T, Mechanical / Tool Design, Drafting & Drawing, Facilities Engineering & Management, Lean Manufacturing and Dynamics. Knowledgeable in Modern Manufacturing Techniques & Machine Shop, Basic Instrumentation, Conveyer Systems, Finite Element Analysis, Signal Processing, Mathematical Modelling, Thermodynamics & HT. Experienced with AC/DC power, microcontrollers, and PLCs.

Software: Expert in Autodesk (AutoCAD LT, Inventor), SolidWorks, ANSYS, MATLAB, Google SketchUp, PTC Creo, Plan 3D, Microsoft Office Suite (Word, Excel, Visual Studio), Google G Suite Platform, Mastercam. Fluent in HTML, CSS, C, C++ & Python including PyMOL. Exposure to R Programming, Protein Folding algorithms such as AlphaFold, but seeking more experience.

Languages: Fluent in English & Tagalog (Bilingual), B1 Level in French & Spanish.

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VOLUNTEER WORK & COMMUNITY SERVICE

SOCIAL MEDIA DIRECTOR – (SEPTEMBER 2022 to PRESENT)

TEAMUP SCIENCE

MATH / COMPUTER LITERACY VOLUNTEER TUTOR – (OCTOBER 2020 to OCTOBER 2021)

PROJECT ADULT LITERACY SOCIETY (PALS) EDMONTON

VOLUNTEER WEB DESIGNER – (JULY 2020)

THE SOS HUMAN PROJECT

PROGRAM ADVISORY COMMITTEE – (APRIL 2019 to OCTOBER 2020)

MECHANICAL ENGINEERING TECHNOLOGY DEPARTMENT (NAIT)

S.T.E.M ADVOCATE / VOLUNTEER – (JUNE 2018 to PRESENT)

ASSOCIATION OF PROFESSIONAL ENGINEERS AND GEOSCIENTISTS of ALBERTA (APEGA)

MENTAL HEALTH AWARENESS ADVOCATE / GROUP FACILITATOR – (JUNE 2019)

HEADSTRONG SUMMIT | MENTAL HEALTH COMMISSION OF CANADA

MICROCREDENTIALS

TEAM LEADERSHIP – (JANUARY 2023)

NORTHERN ALBERTA INSTITUTE OF CANADA

HOBBIES & EXTRACURRICULARS

- Self-Taught Home Baker ([Tiers of Joy Cakes + Bakes](#)).
- Building computers and playing video games.
- Martial Arts: kickboxing and working towards a Black Belt in Tae Kwon Do.
- Travelling and the outdoors: hiking, outdoor skating, and snowboarding.