Soma Patra

Acton, MA | soma.patra@gmail.com | (857) 364-9035 | www.linkedin.com/in/soma-patra

EDUCATION

Rensselaer Polytechnic Institute (RPI)

Master of Engineering in Biomedical Data Science   *Aug. 2024 - May 2026*
- **Grade Point Average:** 3.55/4.0
- Relevant coursework: Machine Learning Applications, Data Analytics, Advanced Data Resource Management, Data Analysis in Econ and Finance, Engineering Math in Data Science, Econometrics 1

Bachelor of Science in Biomedical Engineering, *Concentration in Data Science*   *Aug. 2022 - Dec. 2025*
- **Minors:** Biochemistry/Biophysics, Literature and Writing
- **Grade Point Average:** 3.56/4.0, Dean's Honor List
- Relevant coursework: Biostatistics for Life Science Applications, Biomedical Data Science, AI for Biomedical Applications, Modeling of Biomedical Systems, Mathematics in Medicine & Biology, Molecular Biochemistry 2, Organic Chemistry 2, Advanced Systems Physiology, Biomedical Engineering Lab

PROJECTS AND RESEARCH EXPERIENCE

Research Assistant | Hahn Research Group | Troy, NY   *Jan. 2025 - Present*
- Conducted 600+ hours of research in Spring 2025 doing literature reviews, running models, and creating pipelines
- Created machine learning models using Python and MATLAB to predict autism spectrum disorder in clinical settings
- Worked with graduate students to refine classification techniques, improve model performance, and form new pipelines
- Used data analysis techniques in Python and Excel to clean/organize data for better lab documentation and reporting

Wearable Sensor Project | Data Science Master's Project   *Aug. 2025 - Present*
- Working with The Center For Discovery to investigate behavioral trends in individuals with autism spectrum disorder (ASD) based on data collected from wearable sensors
- Conducting literature reviews regarding the use of biomedical signal processing and time series data in predictive models for challenging behaviors in individuals with profound ASD

Bone Fracture Biosensor Project | Biomedical Engineering Capstone Project 2   *Aug.2025 - Present*
- Creating a tool to measure healing rate in bone fractures to anticipate fixation plate failure before catastrophic injury
- Utilizing biomedical signal processing and machine learning techniques to create a data processing pipeline
- Designing novel circuit designs to collect data from bone fracture sites and convey information to outside the body

Engineering Education Data Science Research Project   *Aug. 2025 - Present*
- Leading effort to discover trends in engineering education with K-12 STEM outreach data
- Utilizing Python, Excel, and JMP to highlight data correlations in cohorts of parents, students, teachers, and stakeholders
- Creating unique data collection methods to expand dataset information by introducing a 5th cohort of engineering students
- Documenting experiment data, analyses, and findings in multiple forms, including local news article, and journal paper

Crowdfunding Platform AI and Machine Learning Research Project   *Aug. 2024 - Jan. 2025*
- Utilized AI and machine learning models in Python to analyze data scraped from international online crowdfunding platforms, cleaning data, creating neural networks, and using data visualization techniques
- Worked with professors and graduate students to document processes and analysis steps in 2 project-related papers

Autonomous Surgical Light | Biomedical Engineering Capstone Project 1   *Aug.2024 - Dec. 2024*
- Developed an autonomous surgical light to limit necessity of manual movement mid-procedure and remain shadowless
- Aimed to minimize human intervention by creating a design that followed the surgeon's hand and tools

Effect of Pin Size and Placement in Chicken Tibiae | Biomedical Engineering Lab   *May 2024 - Aug. 2024*
- Examined the effect of pin placement and pin size in chicken tibia to explore varying treatments for bone fracture
- Conducted testing on Instron machine, creating a custom procedure and recording all findings in a journal-style paper

Mini Projects in Data Analysis | RPI Biomedical Engineering Research   *April 2023 - Jan. 2024*
- Committed 150+ hours to creating new statistical content through computational data analysis
- Led a small team to develop 4 projects in R to consolidate, visualize, and analyze data from various engineering fields

WORK EXPERIENCE

Systems and Mission Analysis Intern | MITRE Corporation | Bedford, MA *June 2025 - Aug. 2025*
- Developed systems engineering model in SysML to enhance data flow and model accuracy based on aircraft hardware
- Documented all processes for future model improvement to facilitate pipeline implementation in simulation environments
- Led team in company-wide AI Hackathon, creating a classification model to enhance data security, achieving 0.05 log loss

Patient Care Assistant (PCA) | Tempus Unlimited Inc. | Acton, MA *March 2020 - Oct. 2023*
- Provided care to a disabled individual to assist in independent living

TEACHING EXPERIENCE

Senior Engineering Ambassador | RPI Engineering Ambassadors | Troy, NY *March 2023 - Present*
- Presented at 40 schools to introduce real-life engineering phenomena to K-12 students, reaching 16,000 students in 1 year
- Contributed 300+ hours to planning/organizing school visits and presentations, almost doubling educational outreach
- Expanded professional outreach by educating new members and connecting with surrounding companies
- Initiated effort to seek additional external funding through applying to 20+ grants, looking for new sources of revenue, collecting organizational financial documentation, and creating custom templates and guides for future use
- Helped lead organization recruitment for 3 consecutive years, reviewing 50+ applications, conducting 40+ in-person interviews and 30+ oral presentation interviews, and selecting new cohorts of 10-20 ambassadors
- Was LEAD Mentor at 2025 and 2024 Northeast Regional Conferences, leading groups of 10-14 new ambassadors and 3-4 mentors in learning the assertion-evidence presentation style, effective presentation skills, and engaging large audiences
- Attended 2025 National Leadership Conference, learning crucial skills for team leadership, emotional intelligence in various professional settings, creative idea expression, and giving effective oral presentations

Academic Tutor | RPI School of Engineering | Troy, NY *Aug. 2024 - Dec. 2024*
- Assisted students with homework and content questions in Biostatistics for Life Science Applications and Biomechanics
- Showed students how to use software such as SOLIDWORKS and R code for use in course projects and assignments
- Developed supplemental resources from self-made notes and materials to reinforce complex concepts

Undergraduate Teaching Assistant | RPI School of Engineering | Troy, NY *Aug. 2023 - Dec. 2023*
- Collaborated with professors to facilitate in-class learning in mechanics, statics, and linear algebra
- Provided 1-on-1 support for homework and in-class assignments, demonstrating concepts in classes of 75 students

LEADERSHIP AND VOLUNTEER EXPERIENCE

Vice President | Tau Beta Pi Engineering Honor Society | Troy, NY *Oct. 2023 - Present*
- Headed club operations, boosting membership by initiating the 2 largest in-person classes in the NY Gamma chapter
- Collaborated with other chapters and national headquarters to shape regulations and enhance the overall organization
- Attended 2024 Tau Beta Pi National Conference, 2025 and 2024 Tau Beta Pi District Conferences to learn professional skills, collaborate with other chapters across the country, and understand organization operational needs at a national level

Editor-in-Chief, Managing Editor | *The Polytechnic* **Newspaper** | Troy, NY *Aug. 2022 - Present*
- Lead the student-run newspaper in writing, copy editing, and proofreading 7-10 articles weekly
- Organize the coverage of local news and events in the Troy area to efficiently provide news to the Rensselaer community
- Lead organization recruitment, educating new members on journalistic techniques and club-specific procedures
- Create and maintain documentation on newspaper protocol, grammatical techniques, and general proofreading skills
- Attended College Media Association's national conference to connect with other student reporters and learn about journalism and how to lead a collegiate newspaper

Active Member | AI/ML Research Group | Troy, NY *Oct. 2024 - Present*
- Only undergraduate student who collaborates with professors and doctoral students in reading and reviewing academic papers relating to current issues in AI and machine learning, with emphasis on data security and AI education

Professional Relations Chair | RPI Biomedical Engineering Society | Troy, NY *Aug. 2022 - Aug. 2024*
- Organized club events to collaborate with professors, graduate students, and alumni for professional development
- Connected with industry leaders and alumni to bring professional opportunities to RPI biomedical engineering students

SKILLS

Data Science: Python, MATLAB, R Code, SQL, C++, Java, Microsoft Excel, Microsoft Visio, JMP
Engineering Tools and Equipment: NI LabVIEW, Siemens NX, SOLIDWORKS, LaTeX, Systems Modeling Language (SysML), Magic Systems of Systems Architect (MSoSA), Blender, Instron Machine
Communicative: Technical Writing, Research Writing, Public Speaking, Oral Presentations

CERTIFICATIONS/HONORS

- *Six Sigma Green Belt*, Issued by National Institute of Industrial and Systems Engineers   *Nov. 2023*
- *Six Sigma Healthcare Green Belt*, Issued by National Institute of Industrial and Systems Engineers   *Nov. 2023*
- *Geometric Dimensioning & Tolerancing*, Issued by Hudson Valley Community College   *Jan. 2024*
- *Tau Beta Pi Initiate*, National Engineering Honor Society, New York Gamma Chapter, RPI   *Oct. 2023*
- *Beta Beta Beta (Tri Beta) Initiate*, National Biology Honor Society, Theta Eta Chapter, RPI   *Nov. 2024*
- *Order of the Engineer*, RPI   *Oct. 2025*