

# Ronje Roy

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## Education

### **BS/MCS, Computer Science and Economics | University of Illinois at Urbana-Champaign | 2021-2025**

- **Coursework:** Algorithms & Models of Computation; Applied Machine Learning; Database Systems; Data Structures; Stochastic Processes; Artificial Intelligence; Signals, Information, & Computation; Game Theory; Financial Engineering; Financial Economics; Statistics & Probability; Multivariable Calculus; Linear Algebra
- GPA: 3.81/4.0; College of Engineering Dean's List: Fall 2021 & Spring 2022
- **Organizations:** Quant @ Illinois, Illinois Business Consulting, Association for Quant Trading Education, Formula SAE

## Experience

### **Quantitative Trading Intern | Optiver | June 2024 - August 2024**

- Completed an advanced derivatives theory course, applying sophisticated models & game theory concepts to options trading
- Traded equity options on a simulated desk, leveraging real-time options pricing on Optiver's cutting-edge systems
- Conducted quantitative research projects using Python, analyzing large datasets to uncover market patterns and signals, and backtesting trading strategies for effectiveness

### **Software Engineering Intern | UnitedHealth Group (Optum) | June 2023 - August 2023**

- Engineered and integrated a Python-based NLP chatbot leveraging libraries such as NLTK and Rasa, trained on data to provide information on automation tools including Ansible, Terraform, Dynatrace, Zabbix, Grafana, Splunk, and Chef
- Applied machine learning techniques to optimize chatbot responses, enhancing internal user experience and efficiency in accessing information about UnitedHealth Group's automation ecosystem

### **Emerging Technology Intern | Synchrony Financial | January 2023 - May 2023**

- Completed an analysis of existing software tools such as ServiceNow and Tableau to best display the real time status of dependent systems providing data availability for Data Operations team
- Leveraged statistical analysis and machine learning to predict the impact of software changes on data operations, and developed a correlation matrix to identify potential areas of data incidents across different software systems

### **Options 201 Course Fellow - Quantitative Trading | Akuna Capital | April 2023**

- Selected to participate in exclusive options trading and market-making course after a series of mathematical aptitude exams

### **Software Engineering Intern | UnitedHealth Group (Optum) | June 2022 - August 2022**

- Developed a full-stack web app to dynamically generate configuration screens presenting a rules engine for UHG's order management business, allowing pharmacists to efficiently check prescriptions against provided parameters
- Created backend application in NextJS to query a MySQL database and retrieve screen-specific JSON objects
- Implemented and designed frontend screens with ReactJS and utilized Material UI for table interface

## Selected Projects

### **Tesla Options & Volatility Research | Quant @ Illinois**

- Led a team to develop LSTM/GARCH models for predicting Tesla's future realized volatility using historical volatility data
- Developed and implemented a trading strategy with ATM straddles, trading based on implied volatility pricing
- Backtested the strategy on QuantConnect, evaluating performance metrics for volatility predictions and trading efficacy

### **Formula SAE Firmware & Electrical Team Member | Wisconsin Racing | November 2021 - June 2022**

- Collaborated with several mechanical engineering sub-teams to optimize dashboard screens for user experience
- Developed software to send CAN messages after reading/processing voltage data within transmission control module using embedded C and C++, and gained practical expertise in PCB design using Altium Designer software

### **Management Consultant | Illinois Business Consulting**

- Researched various applications of the metaverse for a multinational accounting and professional services firm
- Presented formal recommendations to upper management and collaborated with a team to develop strategic solutions

## Skills and Abilities

- Languages: Python, Java, C, C++, JavaScript, SQL, R, MATLAB, OCAML, Assembly, HTML/CSS
- Tools: React JS, NextJS, Material-UI, NumPy, Pandas, MySQL, Altium Designer, CAD, Arduino, Git, Jenkins, Docker, Github