

# NAWALDEEP SINGH

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## EDUCATION

<b>Baccalaureus in Arte Ingeniaria, Computer Engineering</b> , Trinity College Dublin	2021 - 2023
First Division	65%
<b>Bachelors of Engineering, Computer Science</b> , Thapar University	2019 - 2021
First Division	85%
– Scholarship for academic excellence in Thapar University.	2020 & 2021
– Awarded for achieving 92.4% in Grade 12 CBSE Board Exams (Equivalent to Irish Leaving Certificate)	2019
<b>Relevant coursework</b>	Data Visualization, Deep Learning, Augmented Reality, Security and Privacy, Computer Networks, Software Development, Probability and Statistics
<b>Final Year Project</b>	Volatility and Latency in High-frequency Big Data [Big Data Analytics, Data Processing, Statistical Modeling, Econometrics]

## WORK EXPERIENCE

<b>Machine Learning Intern</b>	May 2022 - July 2022
Internship by Thapar University	<i>Patiala, India</i>
	<ul style="list-style-type: none"><li>Engineered an AI-based system for vehicle and violation detection, achieving a detection accuracy of 92%.</li><li>Implemented Python, OpenCV, Keras, and TensorFlow, on a Raspberry Pi hardware under Rs 20k budget.</li><li>Led a team of 3 to demonstrate software's traffic violation detection, enhancing project management skills.</li></ul>
<b>Team Member</b>	Sep 2021 - May 2022
Formula Trinity	<i>Dublin, Ireland</i>
	<ul style="list-style-type: none"><li>Developed hybrid path-planning using reactive spline and RRT* algorithms for optimal race line computation.</li><li>Implemented an adaptive linear model predictive controller using OSQP, and constructed a contingency plan with a pure pursuit steering control algorithm, ensuring a reliable fallback.</li><li>Collaborated to ensure seamless integration, winning Best Newcomer and Real AI award at FSAI and FSUK.</li></ul>
<b>Retail Assistant</b>	Feb 2022 - April 2022
SuperValu	<i>Dublin, Ireland</i>
	<ul style="list-style-type: none"><li>Managed 100's of daily transactions with more than 98% accuracy, maintaining efficient checkout process.</li><li>Bolstered inventory management, reducing discrepancies and stocking times, enhancing operational efficiency.</li></ul>
<b>AI Intern</b>	May 2021 - July 2021
Internship by LNM Institute of Technology	<i>Jaipur, India</i>
	<ul style="list-style-type: none"><li>Created LSTM and GRU models for stock price prediction, improving prediction accuracy by 23%.</li><li>Increased simulation profits by 15% through researching and implementing innovative trading strategies.</li></ul>

## SKILLS

<b>Programming Languages</b>	Python, C/C++, PL/SQL, JavaScript, HTML, C#, MATLAB, LaTeX
<b>Databases</b>	MySQL, NoSQL, Oracle
<b>Applications/Frameworks</b>	DataBricks, Spark, Power BI, Tableau, Linux, SQL, Arduino, Hadoop, Word Photoshop, MATLAB, AutoCAD, Git, AWS, Docker, Unity, Blender, Excel,
<b>Libraries</b>	Keras, TensorFlow, PyTorch, Pandas, NumPy, Matplotlib, Scikit-learn, OpenCV, PySpark, GARCH, Seaborn

## PROJECTS

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**Volatility and Latency in High-frequency Big Data** Sep 2022 - April 2023  
Final Year Project, Trinity College Dublin *Dublin, Ireland*

- Derived insights into financial volatility by analyzing statistical moments in HFT with 5 separate time frames.
- Implemented REST API to call the data into CSV which was analysed using Python and Spark.
- Improved processing time and reduced CPU utilization by 117% for complex tasks using Spark.
- Found parallel Python to be more effective than Spark for data analysis with less intensive computations.

**Collaborative Theme-based Room Decoration AR Application** March 2023 - May 2023  
XR Development Project *Dublin, Ireland*

- Directed AR app creation with Unity, Blender, AR Foundation, and ARCore for real-time interior design, overcoming networking challenges to incorporate multiplayer capability.
- Initiated a user interface offering two themes and three elements each for personalized room designs.

**Airport Passenger Management System** Nov 2022  
Relational Database Management System *Dublin, Ireland*

- Developed a MySQL-based management system, resulting in streamlined ticketing for multiple airlines at international airports.
- Designed ER diagram, schema, triggers and integrated 2-3 security features, ensuring efficient and secure ticketing inventory management.

**A P2P Network for Financial Inclusion using Blockchain** Mar 2022 - April 2022  
Computer Networks Project *Dublin, Ireland*

- Co-directed a Python-based P2P network using blockchain for financial inclusion, leveraging two Raspberry Pi for node representation.
- Introduced comprehensive financial services features such as bartering, payment services, credit, and insurance, contributing to an inclusive financial platform.

## CERTIFICATES

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- Statistical Inference and Modeling for High-throughput Experiments by Harvard University. Ongoing
- Python for Data Science and Machine Learning Bootcamp by Udemy. 2022
- Mastering Data Structures and Algorithms using C and C++ by Udemy. 2021
- Trading and Investing basics from Zerodha Varsity. 2020

## EXTRA-CURRICULAR & HOBBIES

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**Committee Member** Sep 2022 - May 2023  
Trinity Hiking Society *Dublin, Ireland*

- Reduced trip costs by over 50%, making hiking activities more accessible to students.
- Enhanced student engagement and society participation by successfully leading over 15 hiking activities.

**Teaching Assistant** Sep 2020 - May 2021  
Pratigya *Patiala, India*

- Developed lesson plans for 10+ students, boosting understanding and interest in the subjects.
- Achieved a 10% increase in student grades through personalized, interactive learning sessions.

**Hobbies:** Hiking, Cycling, Camping, Running, Basketball, Badminton, Music, Rock Climbing, Meditation  
Reading, Learning, Photography, Movies, Gaming, Investing and Trading, Formula 1