Rishav Chatterjee

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Education

- **Imperial College London** — London, UK
  BEng Computing | Grade: 68.52% [2:1] — *Oct 2021 - May 2024*
  - **DoCSoc**: **Software Development Coordinator** of Imperial's largest student society: Department of Computing Society.
  - **Achievement (ICTF 2022)**: Achieved **Group Rank #1** at Imperial Capture The Flag Hackathon '22.
- **La Martiniere for Boys** — Kolkata, India
  High School Diploma (Distinction) | Grade: 95.25% (ISC 2020) — *Mar 2005 - May 2020*

Skills Summary

- **Languages**: Native in English and Bengali, fluent in Hindi
- **Programming**: Java, Python, JavaScript, C, Haskell, Kotlin, FORTRAN
- **Utilities**: Linux, LaTeX, mySQL, Git, MATLAB, MS Office

Experience

- **Imperial College London** — London, UK
  Undergraduate Research Assistant - Prof. Ricardo M. Botas & Dr. Pablo A. Martos — *Jul 2022 - Present*
  Data Analytics and AI development for Turbomachinery applications
  - **Development of high-fidelity turbine meanline model in Python**:
    - **Researched and Developed** the model to run faster simulations than its FORTRAN counterpart model currently in use by the Thermofluids Research Group of Imperial.
    - **Calibration: Validation of CFD simulations** of the turbine model through analysis of Volute and Rotor component models of the Turbine against MATLAB plots generated by the FORTRAN model and calibrated to 99.73% accuracy.
    - **Optimization:** Analyzed and selected **dynamic optimal functional bounds** for a given range for root/solution calculation to significantly reduce net iterative calls and runtime of modular functions.
- **Goldman Sachs** — Remote
  Virtual Software Engineering Experience (Cybersecurity) — *May 2021*
  - **Vulnerability Analysis**: Developed Python script to reverse-engineer MD5 hashes to crack password dump file.
  - **Hashing Algorithm Testing**: Explored slow-hashing algorithms such as SHA512crypt and PBKDF2 and use of Cryptographic Salt to prevent brute-force/dictionary attacks.
- **Xcelsius E-sports** — Kolkata, India
  Founder — *Jul 2019 - Present*
  - **Founded Xcelsius E-sports**: a company that runs Kolkata's first large-scale E-sports League.
  - **Sony Partnernership**: Secured sponsorship deals with 5 companies including a long-term partnership with Sony PlayStation, their first such deal in India by managing to identify and present the value of my audience to brands.
  - **Scaling and Financially Profitability**: Achieved financial profitability and currently planning scaling by expansion into mobile games and streaming by building a community out of thousands of solitary gaming enthusiasts.

Academic Projects

- **ARM Emulator and Assembler** — Stack: C [Extension - C & Python]
  Year 1 Group project on RISC based computer processors (Subset of ARM ISA) — *Jun 2022*
  - **Emulator & Assembler**: Led development of an emulator and an assembler to simulate the execution of an ARM binary file on a Raspberry Pi and to translate ARM assembly source file into a binary file respectively.
  - **Serialisability & Recoverability Analyser [Extension]**: Developed a transaction analyser to determine and visualise the serialisability & recoverability of target histories by creating WFGs to show transaction conflicts (Matplotlib, NetworkX).
- **123&Me** — Stack: JavaScript, Python-Django
  ***CNN ML model** to help children achieve proficiency in numeracy and basic arithmetic* — *Feb 2022*
  - **Interactive Web App Interface**: Developed web app to generate arithmetic problems on-screen with an intuitive UI using HTML, CSS and JavaScript to enable accurate interaction with the canvas via touch/cursor.
  - **Image Compression & MNIST Dataset Training**: Implemented 2-layer compression algorithm to map a 560x560 image from the canvas to a 18x18 with the group to feed the CNN ML model we trained using the MNIST Dataset. This prediction generated by the CNN is checked against the expected answer to the problem posed to the user to provide feedback.
- **Neural Network Height Maps** — Stack: JavaScript
  NN Height Maps Visualisation for Imperial College's Mathematics for ML course on Coursera — *Sep 2021*
  - **Vanilla JavaScript**: Developed algorithm for plotting a 3D contour map of the activation regions of a neural network using custom functions with no library dependencies. Functional implementation of real-time heightmap plot with parallel projection, lighting and shadows. Native responsive UI in HTML and CSS.