

# Sayan Goswami

EDUCATION	<p><b>Universitat Pompeu Fabra</b>, Barcelona, Spain <i>2020 - 2021</i> <i>Master of Science</i>, Intelligent Interactive Systems</p> <p><b>Jadavpur University</b>, Kolkata, India <i>2016 - 2020</i> <i>Bachelor of Engineering</i>, Electronics &amp; Telecommunication Engineering</p>
EXPERIENCE	<p><b>Research Programmer</b>, Quantum Information Group, UAB, Barcelona <i>Sep '21 - Present</i> Research on applying ML methods to optimize continuous variable quantum computing circuits.</p> <p><b>Mentor, Google Summer of Code</b>, mlpack.org <i>May '21 - Aug '21</i> Guiding mentees on multi-objective optimization methods for mlpack, a C++ ML library.</p> <p><b>Research Fellow, AI Research Institute (IIIA-CSIC)</b>, Barcelona <i>Nov '20 - Aug '21</i> Applying RL to model realistic behaviour of NPCs in simulation environments.</p> <p><b>Core Contributor</b>, mlpack.org, Remote <i>Sep '20 - Present</i> Maintaining the popular C++ based open-source machine learning framework mlpack.</p> <p><b>Developer Associate, Samsung R&amp;D Institute</b>, Bangalore <i>May '19 - Jul '19</i> Significantly decreased latency, increased throughput over QUIC protocol for wireless use.</p> <p><b>Mentor, Deep Reinforcement Learning Nanodegree</b>, Udacity <i>Jul '19 - Jan '20</i> Guided students taking Udacity's Deep RL "Nanodegree", weekly meetings, coursework.</p> <p><b>Research Fellow, Vision &amp; Image Processing Lab</b>, IIT Bombay <i>May '18 - Jul '18</i> Worked on deep learning (CNNs, GANs) based CV methods for image co-segmentation with <i>Prof. Subhasis Chaudhuri</i>.</p> <p><b>Research Assistant, AI Lab</b>, Javapur University <i>Aug '18 - May '20</i> Worked on multi-agent RL, game theory, neural control interface &amp; algorithms research with <i>Prof. Amit Konar</i>.</p> <p><b>Community Mentor, Convolutional NN Course</b>, Coursera <i>Jan '18 - Jul '19</i> Guided students taking Andrew Ng's CNN course on Coursera via community forums.</p> <p><b>Research Assistant, NLP Lab</b>, Javapur University <i>Jul '17 - Apr '19</i> Worked on NLP methods for abstractive text summarization with <i>Prof. Sudip K. Naskar</i>.</p>
AWARDS & ACHIEVEMENTS	<p>Awarded <b>JAE Intro ICU Fellowship</b> by the Spanish National Research Council (CSIC) in 2020.</p> <p>Awarded <b>Summer Research Fellowship</b> by the Indian Academy of Sciences in 2018.</p> <p><b>National Finalist</b> at Automate for the Bank hackathon organised by State Bank of India in 2018.</p> <p>Secured a <b>National Rank of 228</b> in WBJEE amongst 150,000 candidates in 2016.</p> <p>Secured a <b>National Rank of 26, Zonal Rank of 2</b> in National Cyber Olympiad in 2016.</p> <p><b>Regional Finalist</b> at TCS IT Wiz Quiz (top 3/100 teams) in 2015.</p>
KEY SKILLS	<p><b>Programming:</b> Python, Golang, C++/C, Unix Scripting, Git, Tensorflow, Pytorch, Keras, MapReduce (Hadoop), MATLAB, Java/Kotlin (Android), Haskell, L<sup>A</sup>T<sub>E</sub>X, Assembly (x86, MIPS), Verilog, SQL, HTML, React, Typescript, Redis, Django, Flask</p> <p><b>Machine Learning &amp; Data Analysis:</b> Reinforcement Learning (Factored MDP, Bandits, Options Framework), Deep Learning (CNNs, RNNs, GANs), Machine Learning (SVM, KNN, Decision Trees, Bayes)</p>

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PUBLICATIONS	<p>“Brain Signal Analysis for Mind Controlled Type-Writer Using a Deep Neural Network” – 5<sup>th</sup> WiSPNET, 2020, Rohini Das, <b>Sayan Goswami</b>, Sayantani Ghosh, Mousumi Laha, Chandrima Debnath and Amit Konar</p> <p>“Relationship between Nash Equilibria and Pareto Optimal Solutions for Games of Pure Coordination” – 10<sup>th</sup> ICCCNT, 2019, Rohini Das, <b>Sayan Goswami</b> and Amit Konar</p> <p>“Application of Deep Neural Network on Image Co-segmentation” – Indian Academy of Sciences SRF Report, 2018, <b>Sayan Goswami</b> and Subhasis Chaudhuri</p>
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SELECT PROJECTS	<p><b>metal.compute</b> – A C++ example showcasing the use of Apple’s Metal API for general purpose GPU accelerated compute.</p> <p><b>bandit.rl</b> – A k-armed bandit test bed implementation for comparing various reinforcement learning algorithms.</p> <p><b>mlpack</b> – Implemented a framework for multi-objective optimization in the popular open-source C++ machine learning library mlpack.</p> <p><b>rtx.go</b> – A brute force ray tracing implementation.</p> <p><b>eightyfive</b> – An emulator for Intel’s 8085.</p> <p><b>ysh</b> – An UNIX shell implementation.</p> <p><b>gobi</b> – An in-memory database with a query language.</p> <p><b>infinity</b> – A signed, arbitrary precision decimal arithmetic library for C++, dynamically linked at compile time.</p> <p><b>Deep Co-segmentation</b> – Deep object co-segmentation with deep convolutional neural networks using a siamese architecture.</p> <p><b>SegNet</b> – Semantic image segmentation using deep convolutional auto-encoders.</p> <p><b>flow</b> – Visualiser for control flow of arbitrary python code.</p> <p><b>fsmutil</b> – A finite state machine generator for binary sequence detection.</p> <p><b>Pyscuss</b> – A real time messaging app, uses web sockets, non-persistent sessions.</p> <p><b>bfutil</b> – An interpreter for the BF language and a translator from BF to C with optimisations.</p> <p><b>LinkTo</b> – An URL shortener with analytics dashboard, built using Flask framework, uses Redis as datastore.</p>
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REFERENCES	Available on request.
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