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Natalie Grefenstette, PhD

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Results-driven with a strong background in scientific research, machine learning and data science. Proven expertise in developing and implementing advanced models to solve complex business problems. Skilled in analyzing data, optimizing models, and delivering high-accuracy results. Recognized for contributions to my field of research, including published research papers and presentations at top conferences. Adept at leading collaborative efforts and managing teams to drive successful project outcomes.

Professional Experience

AI resident **February 2023 — ongoing**
Apziva *remote*

- Led commercial models to predict customer outcome and improve sales (see Recent Projects section below)
- Developed ML pipeline using NLP to rank candidates for a job search
- Created an advanced machine learning model to learn whether an image of a page was being flipped, with 98% accuracy

Postdoctoral researcher **June 2019 — August 2022**
Santa Fe Institute *Santa Fe, NM, USA*

- Led the construction of computational models for multi-million dollar NASA project to analyze space data for signs of life
- Devised algorithms to look for general polymeric structures (abstracted from RNA, DNA or proteins) in mass spectrometry data
- Spearheaded large scale international collaborative efforts with world leading universities resulting in 2 published chapters
- Executed independent peer review of NASA grants
- Organized a successful workshop for 30+ emerging scholars (budget: $67.1k), along with conference sessions at top conferences
- Published 8 papers in top journals, and was invited to talk and present at key conferences, as well as world leading universities

CEO and Co-founder **November 2017 — June 2020**
Encelo laboratories *London, UK*

- Developed the business-case for non-invasively sourcing patient specific cells for biotechnological applications, and managed the financial budget for prototype and business development
- Top 3% of companies selected for the Rebelbio accelerator (VC-backed)
- Obtained 7 letters of intent from potential clients worth over £50k annually combined, and letters of support from top pharmaceutical and biotech companies
- Hired and led a team to develop applications and client leads, leading the business to secure over £150k in private equity

Entrepreneur in residence **June 2017 — October 2017**
Deep Science Ventures *London, UK*

- Top 3% of candidates selected for the program to work on solving difficult technical challenges in multidisciplinary projects while developing a deep understanding of biotech ecosystems (including health, energy, and climate)
- Built business-cases from a position of fulfilling a need and solving a problem observed in the world while disrupting the established system

Education

PhD, Chemistry, *University College London* - Studied the prebiotic synthesis of RNA precursors **2017**

- Speciliazed in nucleophilic aqueous phosphorylation and systems chemistry
- Discovered a generational node in the network of prebiotic chemistry that links the syntheses of amino acids with nucleotides
- Received an award for best talk at a conference and published my work in several key journals

BSc, Biochemistry, *University College London* - Graduated with honors in the top 5% (Dean's list) **2012**

Skills, Interests and Miscellaneous

Programming Tools	Python, Data visualization, Machine learning, Data Processing, Data analysis
Key soft skills	Problem-solving, Curiosity, Analytical thinking, International and interdisciplinary collaboration, Fast-Paced environments, Multitasking, Self-learning, Self-organization, Communicating complex ideas
Languages	English (fluent), French (fluent), Spanish (intermediate)
Interests	Jazz, singing, wood working, digital design, squash
Miscellaneous	Featured in The Economist and the '50 inspirational women in STEMM' book

Notable activities

IBM Data Science Certificate 2023
External conference organizing committee, AbGradCon 2020 — 2021
Peer reviewer for top journals in the field 2020 — present
Undergraduate Complexity Research mentor 2021
Guest lecture at Art of Inquiry, an interactive online school for ages 10-14 2021
Orchestrated a successful Kickstarter campaign, raising +£4000 to record an album 2018
Other media appearances: MIT Technology Review DE, SFI news, Astrobiology NASA news, Blue Marble Space Institute of Science, Smithsonian magazine, Biomusings
Podcasts: Alien Crash Site, Complexity by the Santa Fe Institute, Learning with Lowell

Recent projects

Value Investor *Apziva*
- Forecasted financial movements using state of the art algorithms including LSTM, ARIMA and Prophet.
- Built a investment algorithm to maximize profit across 8 portfolio companies.

Mon Reader *Apziva*
- Developed an advanced CNN algorithm to assist visually impaired individuals with document scanning independently.
- Enhanced the baseline model through optimization techniques to achieve exceptional accuracy, delivering precise results with a 98% accuracy rate.

Potential Talents *Apziva*
- Devised a state-of-the-art ML pipeline aimed at reducing the cost of talent acquisition by efficiently screening and identifying highly skilled candidates.
- Developed a powerful ranking algorithm to create a shortlist of applicants using natural language processing and learn-to-rank algorithms, streamlining the screening process and increasing efficiency.

Term Deposit Marketing *Apziva*
- Constructed a deep learning system to identify the most suitable prospective customers from a highly imbalanced dataset.
- Achieved a high accuracy (87%), providing the sales team with valuable insights into critical client characteristics and increasing the chances of successful sales.

Happy Customer *Apziva*
- Identified the root cause of customer dissatisfaction and devised a strategic plan to extend the customer lifecycle, resulting in improved customer retention.
- Leveraged multiple ML algorithms to redesign the user experience and service by pinpointing of critical factors contributing to customer satisfaction

Polymer evolution *Santa Fe Institute*
- Built robust computational models (Python, Jupyter, Numpy, Gillespie algorithms, Monte Carlo sampling) to study signatures of evolution in large populations of polymers
- Analysed large datasets (time series analysis, data visualisation, pandas, numpy, matplotlib, seaborn) to extract key insights

Early amino acids *Earth Life Science Institute*
- Successfully applied new programming skills in a research environment leading to a paper in a top journal in the field
- Developed a program to analyse hypothetical earlier sets of canonical amino acids compared to potentially available non-canonical alpha amino acids (Python)
- Studied the incorporation of amino acids in the genetic code using cheminformatics approaches (JChem, GenerateMD and CxCalc)