

# Abrar Rahman

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## EDUCATION

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- **The University of California, Berkeley** Aug 2019 - Dec 2022
  - Bachelor of Arts in Computer Science, Minor in Data Science, Certificate in Entrepreneurship & Technology

## EXPERIENCE

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- **Software Developer; Epic Systems** Feb 2023 - Dec 2023
  - Drove improvements in cloud architecture, observability, and billing for multi-tenant **Kubernetes** deployments, optimizing patient safety and operational efficiency, largely in **Python**, **C#**, and **TypeScript**.
  - Worked on a **RAG pipeline** for internal documentation which reduced help desk ticket volume by 15%.
  - Implemented **semantic caching** for **OpenAI** generations in **Microsoft Azure CosmosDB**, reducing expenses by 8% and enabling Epic to scale to millions of tokens per day.
- **Research Assistant; Center for Responsible, Decentralized Intelligence** Feb 2022 - Dec 2022
  - Pioneered **decentralized finance (DeFi)** research initiatives under Professor Dawn Song.
  - Developed novel **ERC** token with **Solidity** to list non-custodial rental NFTs on DEXes.
- **Software Development Engineer Intern; Amazon** May 2022 - Aug 2022
  - Used **TensorFlow** and **KerasNLP** to customize product recommendations for customers.
  - Built an integrated dashboard for product graph data with **React**, **S3**, **DynamoDB**, **CloudSearch**, and **Vis.js**.
- **Research Assistant; Lawrence Berkeley National Laboratory** Mar 2021 - Oct 2021
  - Led the development and evaluation of **gradient-boosted machine learning models** in **R** for peak usage prediction, advancing electrical grid measurement and verification tools for the U.S. Department of Energy.
  - Created a suite of data cleaning functions, analytics tools, and visualizations for researchers at Berkeley Lab.
- **Software Engineering Intern; Tesla** May 2021 - Aug 2021
  - Refactored **PostgreSQL** queries into **AWS Lambdas** in **Python**, adding authentication features to factory devices to improve computer vision architecture.
  - Developed a validation pipeline for component shipments from suppliers worth \$50,000 annually.
- **Software Engineering Intern; MolecularDX** May 2020 - May 2021
  - Used **scikit-learn** and **Stanford CoreNLP** to develop a **k-means clustering model** for COVID-19 outcomes.
  - Bridged multi-tenant and single-tenant endpoints with **Kong Gateway** and **Kubernetes**.
- **Research Intern; The University of Arizona** Jul 2017 - Aug 2018
  - Performed **time-series analysis** on data from wearable sensors and 3D motion capture cameras to differentiate between conventional and diseased respiratory activity.
  - Developed sentiment-analysis capabilities for Electronic Health Records with **Google Cloud Speech API**, **Stanford CoreNLP**, **OpenCV**, and **TensorFlow**.

## PUBLICATIONS

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- **2022 arXiv Preprint; Quantitative Finance**
  - First author. Systematization of Knowledge: Synthetic Assets, Derivatives, and On-Chain Portfolio Management. Subjects: General Finance (q-fin.GN); Pricing of Securities (q-fin.PR); Risk Management (q-fin.RM)
- **2021 IEEE International Conference on Tools with Artificial Intelligence (ICTAI)**
  - Disease Modeling with a Forest Deep Neural Network Utilizing Natural Language Processing and a Virtualized Clinical Semantic Network.
- **(Multiple Years) IEEE International Conference on Big Data**
  - 2021. Modeling Influenza with a Forest Deep Neural Network Utilizing a Virtualized Clinical Semantic Network. 4th Special Session on Healthcare Data.
  - 2020. First author. A Machine Learning Based Modeling of the Cytokine Storm as it Relates to COVID-19 Using a Virtual Clinical Semantic Network (vCSN).
  - 2019. First author. A Big-Data Approach to Defining Breathing Signatures for Identifying Disease Symptoms.
  - 2019. First author. Smart EHR - A Big-Data Approach to Automated Collection and Processing of Multi-Modal Health Signals in a Doctor-Patient Encounter.

## PROJECTS

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- **United States Patent and Trademark Office**
  - Rahman, Abrar. A System to Record, Display, and Authenticate Certificates and Peer-to-Peer Endorsements on a Decentralized Public Ledger. Filed December 25, 2022. Patent pending. USPTO 63/435,254.
- **LLM Clinical Intake Chatbot**
  - Built with **GPT-3.5**, **Azure Speech**, **Twilio API**, and **Vocode**, enables users to complete automated patient registration via phone call.