Rashad Eletreby

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US Permanent Resident

Education

Carnegie Mellon University — Pittsburgh, PA
PhD and MS in Electrical and Computer Engineering — *Aug. 2015 – Sep. 2019*

Experience

Senior Manager, Data Science — April 2024 – Present
Walmart, Inc. — *Hoboken, NJ*

- Setting vision and strategy for AI within BuyBox and Availability areas, defining the team's quarterly roadmap in collaboration with product and business partners to align with Walmart's broader business goals.
- Leading a team of five data scientists in developing advanced machine learning models for Walmart's BuyBox. These models determine the winning offer among competing sellers for a given product using state-of-the-art machine learning techniques.
- Designing and implementing multi-dimensional seller performance signals that assess seller reliability, enhancing decision-making across the organization. These signals are foundational for downstream services like BuyBox, search, and recommendations, driving improvements in customer experience and operational efficiency.

Principal Data Scientist — August 2022 – April 2024
Rocket Travel by Agoda — *Chicago, IL*

- Collaborated with Partnership and Product stakeholders to define the vision and strategy for AI in Rocket Travel's B2B2C products, enhancing customer experience across multiple travel services.
- Led a team of three data scientists in designing and deploying advanced ML ranking models for hotel search, achieving a 3% conversion lift across all B2B2C partners.
- Developed a transformer-based neural translation model for hotel static information (English to Spanish and English to Portuguese), reducing customer complaints by 23% and boosting revenue by 2%.
- Initiated and drove the development of an AI-based travel assistant MVP using the OpenAI ChatGPT API and Agent framework, integrating backend systems to provide personalized hotel and itinerary recommendations, with real-time pricing and availability.

Staff Data Scientist — December 2020 – August 2022
Walmart, Inc. — *Hoboken, NJ*

- Implemented algorithms based on image understanding to diversify search results and minimize duplicate listings on Walmart.com.
- Built a LETOR framework for Walmart.com online browse shelves, increasing Gross Merchandise Value (GMV) by 1.2%, enhancing product discoverability by 2%, and increasing ad revenue by 6.3%.
- Designed the first multi-objective LETOR framework to empower a unified search experience in support of Walmart OneApp launch, achieving relevance improvements of 15%.
- Developed a suite of critical offline tools for feature performance measurement and ran customer-facing experiments via interleaving and A/B testing.

Senior Data Scientist — October 2019 – December 2020
Walmart, Inc. — *Hoboken, NJ*

- Improved the ML features used within Walmart search LETOR framework, leading to a 12% boost in item discoverability.
- Implemented algorithmic changes to Walmart search LETOR framework, resulting in a 0.60% GMV lift and a 5% latency improvement.

Research Assistant — Aug. 2015 – Sep. 2019
Carnegie Mellon University — *Pittsburgh, PA*

- Proposed and analyzed mathematical and simulation models to characterize the spread of information and diseases in real-world complex networks (**PNAS**).

- Proposed and analyzed novel random graph models to capture the secure connectivity of large-scale, heterogeneous wireless sensor networks (**IEEE Trans. on Info. Theory**).
- Developed techniques for decoding collisions and extending transmission range in LP-WAN transmissions (**ACM SIGCOMM**).
- Devised methods for community detection on social network subgraphs, incorporating both structural and content information.

Honors and Awards

Received multiple awards of excellence including the *Making the Difference Award*, Walmart (2021), *Philip and Marsha Dowd Fellowship*, Carnegie Mellon University (2017-2018), and *CMU Presidential Fellowship*, Carnegie Mellon University (2017-2018).

Patents

(P1) M. Goyal, A. Kast, **R. Eletreby**, X.Liu, B. Yang, and C. Mu *"Systems and methods for improving visual diversities of search results in real-time systems with large-scale databases"* - US20240256625A1 (August 2024)

(P2) **R. Eletreby**, C. Mu, Z. Wang and R. Mukherjee *"Machine learning based methods and apparatus for automatically generating item rankings "* - US20220351239A1 (November 2022)

(P3) **R. Eletreby**, D. Zhang, S. Kumar and O. Yağan *"Low-power wide area networks"* - US11139853B2 (October 2021)

(P4) M. Krunz, B. Akgun, P. Siyari, H. Rahbari, **R. Eletreby**, and O. Koyluoglu *"Systems and methods for securing wireless communications"* - US10069592B1 (September 2018)

Selected Publications

Journal Papers

(J1) M.Sood, A.Sridhar, **R.Eletreby**, C.W.Wu, S.A.Levin, H.V.Poor, and O.Yağan *"Spreading processes with mutations over multilayer networks"* - Proceedings of the National Academy of Sciences (April 2023)

(J2) O.Yağan, A.Sridhar, **R.Eletreby**, S.Levin, J.B.Plotkin, and H.V.Poor *"Modeling and Analysis of the Spread of COVID-19 under a Multiple-strain Model with Mutations"* - Harvard Data Science Review (April 2021)

(J3) **R.Eletreby**, Y.Zhuang, K.M.Carley, O.Yağan, and H.V.Poor *"The Effects of Evolutionary Adaptations on Spreading Processes in Complex Networks"* - Proceedings of the National Academy of Sciences (March 2020)

(J4) **R.Eletreby** and O.Yağan *"Connectivity of Inhomogeneous Random K-out Graphs"* - IEEE Transactions on Information Theory (June 2020)

(J5) **R.Eletreby** and O.Yağan *"k-connectivity of Inhomogeneous Random Key Graphs with Unreliable Links"* - IEEE Transactions on Information Theory (January 2019)

Conference Papers

(C1) A.Sridhar, O.Yağan, **R.Eletreby**, S.Levin, J.B.Plotkin, and H.V.Poor *"Leveraging A Multiple-Strain Model with Mutations in Analyzing the Spread of Covid-19"* - IEEE ICASSP 2021

(C2) M.Sood, A.Sridhar, **R.Eletreby**, C.W.Wu, H.V.Poor, and O.Yağan *"Epidemic Spreading of Mutating Contagions over Multi-Layer Contact Networks"* - NetSci 2021

(C3) **R.Eletreby** and O.Yağan *"On the Connectivity of Inhomogeneous Random K-out Graphs"* - IEEE ISIT 2019

(C4) **R.Eletreby** and O.Yağan *"Connectivity of Wireless Sensor Networks Secured by the Heterogeneous Random Pairwise Key Predistribution Scheme"* - IEEE CDC 2018

(C5) **R.Eletreby**, D.Zhang, S.Kumar and O.Yağan *"Empowering Low-Power Wide Area Networks in Urban Settings"* - ACM SIGCOMM 2017

For a full list of publications, please visit my Google Scholar profile.