

Rashad Eletreby

reletreby@cmu.edu – (650) 714-2627 – Pittsburgh, PA, USA

<http://www.reletreby.com>

EDUCATION

- AUG 2015 to
AUG 2019 PhD Candidate in the ELECTRICAL AND COMPUTER ENGINEERING Department,
Carnegie Mellon University, USA —Adviser: Prof. Osman Yağan
GPA: 4.0/4.0
- SEP 2012 to
JULY 2014 Master of Science in ELECTRICAL ENGINEERING, **Cairo University**, Egypt
Thesis: “*Optimal Spectrum Assignment and Clustering for Cognitive Radio Sensor Networks*” — Advisers: Prof. Mohamed Khairy and Dr. Hany Elsayed
GPA: 4.0/4.0
- SEP 2007 to
JULY 2012 Bachelor of Science in ELECTRICAL ENGINEERING, **Cairo University**, Egypt
Graduation Project: “*Roaming Capture Analysis*” — Industry Partner: Vodafone Egypt
— Adviser: Prof. Mohamed Khairy
PERCENTAGE: 88.36% —RANK: 9/310 (Top 3%)

RESEARCH EXPERIENCE

- AUG 2015 to
AUG 2019 **Research Assistant at Carnegie Mellon University**, USA
— Supervisor: Prof. Osman Yağan
- **Fake news detection (ongoing):** Developing machine learning techniques and methodologies that augment social information with news content to detect fake news on encrypted social platforms. **Dataset:** *FakeNewsNet* (The Data Mining and Machine Learning Lab - Arizona State University). **Skills:** Machine Learning, Python, Pandas, and Probability Theory.
 - **Discovering social circles:** Proposing methods for automatic community detection on social network subgraphs under the “Social Circle Analysis” category. Combining structural information (graph connectivity) and content information (traits pertaining to each node in the network) to determine communities within social network graphs. **Dataset:** *ego-Facebook* (Stanford Network Analysis Project). **Skills:** Machine Learning, Auto Encoders, Node Embedding, Clustering, Modularity Maximization.
 - **Network science:** Investigating the *evolution* and spread of information and infectious diseases in complex networks. Building and analyzing mathematical and simulation models to characterize the role of evolutionary adaptations in facilitating the spread of information and infectious diseases. **Skills:** Graph Theory, Stochastic Models, Probability Theory, C++, and Python.
 - **Internet of Things:** Working on the design, evaluation, and implementation of novel techniques that aim to i) disentangle and decode large numbers of interfering LP-WAN transmissions at a simple, single-antenna LP-WAN base station, and ii) extend the communication range of the current LP-WAN sensors. **Skills:** Ettus USRPs, LoRa Radio, MATLAB, C++, and UNIX.
 - **Random graph theory:** Establishing zero-one laws for the k -connectivity of the composite graphs formed by the intersection of *inhomogeneous random key graphs* with *Erdős-Rényi graphs*. Proposing and investigating the connectivity of *inhomogeneous random K -out graphs*. **Applications:** Designing secure, large-scale, heterogeneous wireless sensor networks. Providing anonymity guarantees for transactions over cryptocurrency networks. Modeling the formation of common-interest social networks. **Skills:** Probability theory, Combinatorics, Graph theory, and Python.
- AUG 2014 to
MAY 2015 **Research Assistant at Center of Advanced Networking, University of Arizona**, USA
— Supervisor: Prof. Marwan Krunz
- **Physical-layer security:** Conducted research on physical layer security in multi-link wireless networks using artificial noise techniques.

- (C11) **R.Eletreby** and O.Yağan “*Connectivity of Wireless Sensor Networks Secured by The Heterogeneous Random Pairwise Key Predistribution Scheme*” - IEEE CDC 2018
- (C10) **R.Eletreby**, Y.Zhuang and O.Yağan “*Evolution of Spreading Processes on Complex Networks*” - Conference on Complex Systems 2018
- (C9) **R.Eletreby**, Y.Zhuang and O.Yağan “*Evolution of Spreading Processes on Complex Networks*” - IEEE ITA 2018 - Invited Abstract
- (C8) **R.Eletreby**, D.Zhang, S.Kumar and O.Yağan “*Empowering Low-Power Wide Area Networks in Urban Settings*” - ACM SIGCOMM 2017
- (C7) **R.Eletreby** and O.Yağan “*Secure and Reliable Connectivity in Heterogeneous Wireless Sensor Networks*” - IEEE ISIT 2017
- (C6) **R.Eletreby** and O.Yağan “*Connectivity of Inhomogeneous Random Key Graphs Intersecting Inhomogeneous Erdős-Rényi Graphs*” - IEEE ISIT 2017
- (C5) **R.Eletreby** and O.Yağan “*Reliability of Wireless Sensor Networks under a Heterogeneous Key Predistribution Scheme*” - IEEE CDC 2016
- (C4) **R.Eletreby** and O.Yağan “*Performance of the Heterogeneous Key Predistribution Scheme under a Heterogeneous ON-OFF Channel Model*” - Allerton 2016
- (C3) **R.Eletreby** and O.Yağan “*Minimum Node Degree in Inhomogeneous Random Key Graphs With Unreliable Links*” - IEEE ISIT 2016
- (C2) **R.Eletreby**, H.Rahbari, M.Krunz “*Supporting PHY-layer Security in Multi-link Wireless Networks Using Friendly Jamming*” - IEEE GLOBECOM 2015.
- (C1) **R.Eletreby**, H.Elsayed and M.Khairi “*CogLEACH: A Spectrum-Aware Clustering Protocol for Cognitive Radio Sensor Networks*” - CROWNCOM 2014.

HONORS AND AWARDS

- AUG 2017 to MAY 2018 **Philip and Marsha Dowd Fellowship** at CARNEGIE MELLON UNIVERSITY, USA.
- AUG 2017 to MAY 2018 **CMU Presidential Fellowship** at CARNEGIE MELLON UNIVERSITY, USA.
- AUG 2015 to JULY 2016 **William J. Happel Endowed Fellowship** at CARNEGIE MELLON UNIVERSITY, USA.
- AUG 2015 to JULY 2016 Carnegie Institute of Technology **Dean’s Fellow** at CARNEGIE MELLON UNIVERSITY, USA.
- AUG 2014 to MAY 2015 Full tuition **Graduate Assistantship** at UNIVERSITY OF ARIZONA, USA.
- SEP 2012 to JULY 2014 Full tuition **Graduate Assistantship** at CAIRO UNIVERSITY, Egypt.
- SEP 2007 to JULY 2012 **Award of Excellence** from Faculty of Engineering , Cairo University, Egypt

TEACHING EXPERIENCE

- CARNEGIE MELLON UNIV. • Analytical Performance Modeling and Design of Computer Systems (F17) • Applied Stochastic Processes (S18)
- UNIVERSITY OF ARIZONA • Electronic Circuits Lab (S15 and F14)
- CAIRO UNIV. • MATLAB (Spring 2014) • Linear Control Systems (S12) • Electronic Circuits I (F13 and F12)