

# Belal Salama Amin Korany

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**PROFILE** Extensive experience in radio frequency (RF) sensing, array signal processing, and wireless communications. Research papers (8 first-authored) in top venues (e.g., IPSN, MobiCom). Practical experience with several hardware components, e.g. WiFi NICs, Pioneer 3-AT robots, and NI USRPs. Proficiency in Matlab and C++. Strong theoretical and mathematical background.

**EDUCATION** ● **University of California Santa Barbara, CA, USA** 2015 – 2021 (Expected)  
– Ph.D. Electrical and Computer Engineering – Advisor: Prof. Yasamin Mostofi (GPA: 4.0/4.0)

● **Cairo University, Egypt** 2012 – 2015  
– M.Sc. Electronics and Electrical Communications Engineering (GPA: 3.9/4.0)

● **Cairo University, Egypt** 2007 – 2012  
– B.Sc. Communications and Computer Engineering (GPA: 3.94/4.0)

**RESEARCH PROJECTS** ● **Vision-assisted RF Sensing** UCSB, 2019–2020

- Developed a method for converting vision data into WiFi signals.
- Developed XModal-ID: a novel system to determine if a person walking in a WiFi area behind-wall is the same as one walking in a given video footage.
- Extended the identification system to identify multiple people walking simultaneously based on their gaits and their Angles-of-Arrival to the WiFi receiver.
- Proposed the first RF sensing system trained only using WiFi data generated from video footage.

● **Human Tracking Using Only WiFi Signal Power** UCSB, 2018  
– Proposed a particle-filter-based algorithm to track a single person using the WiFi received power.  
– Extended the tracking algorithm to track multiple-people simultaneously (for the first time) using 3 laptops.

● **Angle-of-Arrival Estimation Using Only WiFi Signal Power** UCSB, 2017  
– Proposed a novel algorithm to determine the AoA using only the received signal magnitude.  
– Validated the proposed algorithm using ground vehicles in different environments on campus.

● **D2D Communications in Massive MIMO Networks** Cairo Univ., 2015  
– Proposed novel power allocation and precoding algorithms for Device-to-Device (D2D) communications in Massive MIMO networks.

**WORK EXPERIENCE** ● **Qualcomm, New Jersey, USA** June 16 – Sep 16

- Summer intern — Recipient of the Roberto Padovani Award for outstanding interns.*
- Analyzed wireless protocols and algorithms for 5G mmWave Networks.
  - Simulated the 5G access network at link-level and system-level.

● **Intel Labs, Cairo, Egypt** July 13 – Apr 14  
*Wireless Application Engineer*  
– Developed an interference mitigation solution for WiFi/LTE coexistence on Intel platforms.

● **Cairo University, Egypt and UC Santa Barbara, CA, USA** 2012 – 2016  
*Teaching Assistant* at the Electrical Engineering Department.  
– Assisted in teaching courses on wireless communications, analog and digital communication systems, signal processing, information and coding theory, and electric circuits.

PUBLICATIONS	<p><b>Patents:</b></p> <ul style="list-style-type: none"> <li>• Y. Mostofi, C. R. Karanam, and <b>B. Korany</b> , “System and Method of Angle-of-Arrival Estimation, Object Localization, and Target Tracking, with Received Signal Magnitude,” U.S. Patent Application No. 62/656,050, April 2018.</li> <li>• A. S. Ibrahim, M. F. Marzban, and <b>B. S. Amin</b>, “Methods and devices for interference variance estimation and interference cancellation,” U.S. Patent 9,794,097, Oct 2017.</li> </ul> <p><b>Papers:</b></p> <ul style="list-style-type: none"> <li>• <b>B. Korany</b>, H. Cai, and Y. Mostofi, ”Multiple People Identification Through Walls Using Off-the-Shelf WiFi,” in IEEE Internet of Things (IoT) journal, accepted to appear, 2020.</li> <li>• H. Cai*, <b>B. Korany*</b>, C. R. Karanam*, and Y. Mostofi, ”Teaching RF to Sense without RF Training Measurements,” in ACM Interactive, Mobile, Wearable, and Ubiquitous Technologies (IMWUT), accepted to appear, 2020.</li> <li>• <b>B. Korany*</b>, C.R. Karanam*, H. Cai*, and Y. Mostofi, “XModal-ID: Using WiFi for Through-Wall Person Identification from Candidate Video Footage,” in ACM Int. Conf. on Mobile Computing and Networking (MobiCom), 2019. (acceptance rate: 19%)</li> <li>• C.R. Karanam, <b>B. Korany</b>, and Y. Mostofi, “Tracking from One Side – Multi-Person Passive Tracking with WiFi Magnitude Measurements,” in ACM International Conf. on Information Processing in Sensor Networks, (IPSN), 2019. (acceptance rate: 27%)</li> <li>• <b>B. Korany</b> et al., “Subspace-Based Imaging Using Only Power Measurements,” in IEEE Sensor Array and Multichannel Signal Processing Workshop, 2018.</li> <li>• <b>B. Korany*</b>, C. Karanam*, and Y. Mostofi, “Adaptive Near-Field Imaging with Robotic Arrays,” in IEEE Sensor Array and Multichannel Signal Processing Workshop, 2018.</li> <li>• C. R. Karanam*, <b>B. Korany*</b>, and Y. Mostofi, “Magnitude-based Angle-of-Arrival Estimation, Localization, and Target Tracking,” in the ACM International Conference on Information Processing in Sensor Networks (IPSN), 2018. (acceptance rate: 27%)</li> <li>• <b>B. S. Amin</b>, A. S. Ibrahim, M. H. Ismail, and H. M. Mourad “Precoding and Power Allocation Algorithms for Device-to-Device Communication in Massive MIMO Networks,” in Wireless Networks (Springer), vol. 24, no. 3, pp. 925-942, April 2018.</li> <li>• <b>B. S. Amin</b>, Y. R. Ramadan, A. S. Ibrahim, and M. H. Ismail, “Power Allocation for Device-to-Device Communication Underlying Massive MIMO Multicasting Networks,” in IEEE Wireless Communications and Networking Conference (WCNC), 2015.</li> </ul>
SELECTED PRESS AND AWARDS	<ul style="list-style-type: none"> <li>• Work on person identification featured in multiple news outlets, including BBC Digital Planet, Yahoo Finance, CNET Japan, and others. [2019]</li> <li>• Qualcomm’s <b>Roberto Padovani Award</b> for interns who demonstrate extraordinary technical talent during their summer internships. [2016]</li> <li>• Full tuition graduate <b>Research Assistantship</b> at UCSB, USA. [2016-present]</li> </ul>
SKILLS	Proficient in MATLAB, and very good in C++, C#, and Python.
ACADEMIC SERVICE	Reviewer of IEEE TWC, IEEE TVT, IEEE TMC, IEEE Access, IEEE VTC, and ACM TSN.