REHAM MOHAMED ABURAS

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QUALIFICATIONS SUMMARY

Ph.D. candidate in the Computer Science Department at Purdue University, with recognized experience in **Mobile Computing** and **Security and Privacy**. My research centers on the advancement of the utility and privacy of emerging technologies by combining system design, machine learning, signal processing techniques, and user studies.

EDUCATION

Purdue University   **Aug 2018 - June 2024 (Expected)**
Ph.D. Student in Computer Science (GPA: **3.9**)

Alexandria University, Egypt   **Feb 2014 - Feb 2018**
M.Sc. in Computer Engineering (GPA: **4.0**)

Alexandria University, Egypt   **Sep 2008 - July 2013**
B.S.E in Computer and Systems Engineering (Grade: **92%**, Rank: $\mathbf{2}^{nd}$)

RESEARCH AND PROFESSIONAL EXPERIENCE

Lead Graduate Student - Prof. Celik's Group, Purdue University   **Jan 2023 - Present**

- Providing mentoring and guidance for graduate students.
- Conducting group meetings.
- Writing research funding proposals.

Research Assistant - Purdue University   **Aug 2018 - Present**

- **Side-channel attacks in smartphones.** Designing a new side-channel attack in iOS that leverages deep learning and statistical models to infer user's app usage from the magnetometer sensor.

- **Investigating dark patterns in tracking permission.** Performing a large-scale study to analyze the dark patterns in the iOS App Tracking Transparency permission prompts. Developing an advanced NLP technique to automatically detect the patterns from prompt text. Designing a between-subject user study to evaluate the pattern effect on user perception.

- **AR/VR Security and Privacy.** Designing a new pairing protocol for securing collaborative experiences in MR devices by leveraging multi-modal sensors. Performing a study to detect and analyze UI dark patterns in VR systems. Designing new warning systems to detect manipulative UI patterns at runtime.

Software R&D Engineer - Avelabs, Egypt   **Dec 2017 - Jul 2018**

- Developed new techniques for automotive technology.
- Applied different ML algorithms for environmental audio detection and classification.

Research Assistant - Wireless Research Center, Egypt   **July 2013 - February 2017**

- Designed a personalized healthcare system to monitor vital signals using smartphone sensors.
- Contributed to an industrial research project for practical indoor localization by mobile sensors.
- Worked on an *industrial research* project for traffic estimation in developing countries. Designed an HMM-based Map-Matcher for coarse-grained cellular locations. Designed a transportation mode detector using inertial smartphone sensors.
- Developed an indoor localization system based on SLAM (Simultaneous Localization And Mapping) probabilistic framework and semantic landmarks detection.

Undergrad Research Internship - Alexandria University, Egypt   **Jul 2012 - Oct 2012**

- Developed a device-free localization system by applying statistical models on the physical layer information of WiFi networks.

AWARDS AND HONORS

- Ross Fellowship Award, awarded for recognized academic excellence (2018)
- Graduation Distinction with the Degree of Honor (Bachelor of Engineering) (2013)

STUDENT RESEARCH ADVISING

Xueyuan Cao	B.S. Computer Science, Purdue University	2022-Present
Abhishek Shah	M.S. Computer Science, Purdue University → Amazon	Summer 2022
' Chandrika Mukherjee	M.S. CS, Purdue University → Ph.D., Purdue University	2022-2023
Jason Perry	B.S. Computer Science, Purdue University → Google	2020-2022
Yidong Lu	Internship in CS, Purdue University	Summer 2019

PROFESSIONAL ACTIVITIES

Reviewer

- IEEE Internet of Things Journal, 2023
- IEEE Transactions on Mobile Computing (TMC), 2021
- ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies (IMWUT), 2021

External Reviewer

- Network and Distributed System Security (NDSS), 2023
- USENIX Security Symposium, 2023
- ACM Conference on Computer and Communications Security (CCS), 2023

Talks and Guest Lectures

- CS390 Great Issues in Computer Science at Purdue University (Fall 2023)
  Topic: Virtual and Augmented Reality Technologies.

- Alexandria CSE Research Meetings at Alexandria University (2013)
  Topic: Mono-stream-based Device-free WLAN Localization.

- Google Ambassadors Event for Enriching Arabic Electronic Content, Alexandria Bibliotheca (2013)
  Topic: Arabic Question Answering for the Holy Quran.

TEACHING EXPERIENCE

Teaching Assistant - Purdue University   **Aug 2019 - Present**

- CS390: Great Issues in Computer Science. [**Fall 2023**]
- CS176: Data Engineering in Python. [**Fall 2020**]
- CS176: Data Engineering in Python (*Course Development*) [**Summer 2020**]
- CS373: Data Mining and Machine Learning. [**Spring 2020**]
- CS573: Data Mining (*Graduate Level*). [**Fall 2019**]

Teaching Assistant - Alexandria University, Egypt   **February 2014 - June 2018**

- Probability Theory. [**Spring 2015-2018**]
- Digital Computer Fundamentals. [**Spring 2015-2018**]
- Data Mining. [**Fall 2015, Fall 2017**]
- Statistics. [**Fall 2015-2017**]
- Introduction to Computer Science. [**Fall 2014-2017**]
- Mathematics for Computer Science. [**Fall 2014**]
- Digital Signal Processing. [**Fall 2014**]

Lab Instructor

- Distributed Systems. [**Spring 2017-2018**]
- Systems Programming. [**Fall 2015-2016**]
- Control Systems. [**Fall 2015-Fall 2016**]
- Database Systems. [**Fall 2016**]
- Data Structures I. [**Spring 2014**]
- Computer Vision. [**Spring 2014**]

PUBLICATIONS

Conference Publications

C7 **Reham Mohamed**, Arjun Arunasalam, Habiba Farrukh, Jason Tong, Antonio Bianchi, and Z. Berkay Celik
ATTention Please! An Investigation of the App Tracking Transparency Permission
Proceedings of the USENIX Security Symposium, 2024.

C6 Habiba Farrukh, **Reham Mohamed**, Aniket Nare, Antonio Bianchi, and Z. Berkay Celik
LocIn: Inferring Semantic Location from Spatial Maps in Mixed Reality
Proceedings of the USENIX Security Symposium, 2023.

C5 **Reham Mohamed**, Habiba Farrukh, He Wang, Yidong Lu, and Z. Berkay Celik
Disclosing Sensitive User Information by Mobile Magnetometer from Finger Touches
Privacy Enhancing Technologies (PoPETs), 2023.

C4 Habiba Farrukh, **Reham Mohamed**, Siyuan Cao, and He Wang
FaceRevelio: A Face Liveness Detection System for Smartphones with a Single Front Camera
Proceedings of the ACM International Conference on Mobile Computing and Networking (MobiCom), 2020.

C3 **Reham Mohamed** and Moustafa Youssef
HeartSense: Ubiquitous Accurate Multi-Sensor Fusion-based Heart Rate Estimation Using Smartphones
Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies (UbiComp), 2017.

C2 **Reham Mohamed**, Heba Aly and Moustafa Youssef
Accurate and Efficient Map Matching for Challenging Environments
Proceedings of the 22nd ACM SIGSPATIAL International Conference on Advances in Geographic Information Systems, 2014.

C1 Heba Abdel-Nasser*, **Reham Samir***, Ibrahim Sabek, and Moustafa Youssef
MonoPHY: Mono-stream-based Device-free WLAN Localization via Physical Layer Information
IEEE Wireless Communications and Networking Conference (WCNC), 2013.

Journal Publications

J2 **Reham Mohamed**, Heba Aly and Moustafa Youssef
Accurate Real-time Map Matching for Challenging Environments
IEEE Transactions on Intelligent Transportation Systems, 2016.

J1 Heba Abdelnasser*, **Reham Mohamed***, He Wang, Souvik Sen, Ahmed Elgohary, Moustafa Farid, Romit Roy Choudhury, Moustafa Youssef
SemanticSLAM: Using Environment Landmarks for Unsupervised Indoor Localization
IEEE Transactions on Mobile Computing, 2015.

Workshop Publications

W2 **Reham Mohamed***, Maha Ragab*, Heba Abdelnasser*, Nagwa M. El-Makky and Marwan Torki
Al-Bayan: A Knowledge-based System for Arabic Answer Selection
Proceedings of the 9th International Workshop on Semantic Evaluation (SemEval), 2015.

W1 Heba Abdelnasser*, **Reham Mohamed***, Maha Ragab*, Alaa Mohamed*, Bassant Farouk*, Nagwa El-Makky, and Marwan Torki
Al-Bayan: An Arabic Question Answering System for the Holy Quran
EMNLP Workshop on Arabic NLP (ANLP), 2014.

Patents

P1 Habiba Farrukh, **Reham Mohammed**, Siyuan Cao, He Wang
System architecture and method of authenticating a 3D object, US Patent App. 16819166.