

Andreas Soleiman

MSc. graduate at Uppsala University

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EDUCATION

MSc. in Engineering Physics

2012 - 2018

Uppsala University, Uppsala, Sweden

Thesis: *Battery-free Visible Light Sensing*; designed a self-powered and battery-free visible light sensing system that could communicate shadow information from hand gestures. The shadow data could later be recorded and processed by an end-device which could identify the hand gestures based on emerging shadow patterns.

PROFESSIONAL EXPERIENCE

Research Assistant

2017 - 2019

Uppsala Networked Objects (UNO) research group, Uppsala University, Sweden. Led by Prof. Thiemo Voigt

Conducted research on devising novel sensing and communication mechanisms for self-powered networked embedded devices, and application-level software mechanisms to infer physical activity from sensor data.

TEACHING

Teaching Assistant

2015, 2018

Uppsala University, Uppsala, Sweden

- UU-61208: Internet of Things (Spring 2018)
- 1TE661: Signals and Systems (Fall 2015)

HONORS AND AWARDS

- Selected for the Rising Stars Forum at ACM MobiSys (2019)
- Best demonstration award at ACM WiSec (2018)
- Selected for the Cornell, Maryland, Max Planck Pre-Doctoral Research School (2018)
- Winner of the ACM Student Research Competition at ACM MobiCom (2017)
- Best paper award at ACM VLCS, held in conjunction with ACM MobiCom (2017).
- SIGMOBILE Travel Grant (1000 USD) to attend ACM MobiCom (2017)
- ACM Travel Award (500 USD) to participate in the Student Research Competition at ACM MobiCom (2017)

TECHNICAL SKILLS

- **Eagle CAD:** Hardware design
- **Python:** signal processing, statistical machine learning and data visualization
- **R:** Statistics
- **C:** Embedded systems programming
- **Matlab + Simulink:** Computational physics and automatic control systems design
- **Java/Kotlin:** Mobile applications
- **Erlang and Standard ML:** Basic level distributed systems programming

LANGUAGES

- Swedish (mother tongue)
- English (fluent)
- Arabic (advanced in speech, basic level writing)

RESEARCH ACTIVITIES

- Ambuj Varshney, **Andreas Soleiman**, Thiemo Voigt: *TunnelScatter: Low Power Communication for Sensor Tags using Tunnel Diodes*, 25th Annual International Conference on Mobile Computing and Networking (ACM MobiCom 2019), Los Cabos, Mexico.
- **Andreas Soleiman**, Ambuj Varshney: *Poster: Towards Backscatter-enabled Networked Utensils*, The 17th ACM International Conference on Mobile Systems, Applications, and Services (ACM MobiSys 2019), Seoul, South Korea.
- **Andreas Soleiman**, Ambuj Varshney: *Demo: Backscatter-enabled Polymorphic Light Sensors*, The 17th ACM International Conference on Mobile Systems, Applications, and Services (ACM MobiSys 2019), Seoul, South Korea.
- Ambuj Varshney, **Andreas Soleiman**, Luca Mottola, Thiemo Voigt: *Battery-free Visible Light Sensing*, The Fourth ACM Workshop on Visible Light Communication Systems (ACM VLCS 2017, in conjunction with ACM MobiCom), Snowbird, Utah, USA. **(Best paper award)**
- **Andreas Soleiman**, Ambuj Varshney, Thiemo Voigt *Poster: Battery-free Visible Light Sensing*, 23rd Annual International Conference on Mobile Computing and Networking (ACM MobiCom 2017), Snowbird, Utah, USA. **(Poster won the 1st prize at the ACM Student Research Competition at ACM MobiCom 2017)**
- Abdullah Hylamia, Ambuj Varshney, **Andreas Soleiman**, Panagiotis Papadimitratos, Christian Rohner, Thiemo Voigt *Demo: Towards Battery-free Radio Tomographic Imaging*, In Proceedings of the 11th ACM Conference on Security and Privacy in Wireless and Mobile Networks (ACM WiSec 2018), Stockholm, Sweden. **(Best demonstration award)**

OTHER PROJECTS

Battery-free indoor localization

Designed a battery-free indoor localization system that could identify the presence of nearby objects or people. The system leveraged solar cells as passive sensors and harvesting units, and radio frequency backscatter for communicating shadow information at a few microwatts of power. Fall 2016

Using Deep Reinforcement Learning to Play Games

Implemented a Deep Q-Learning agent using PyTorch with the purpose to play games from OpenAI's Gym environment. The agent could be trained to play e.g. *Pong* and *Space Invaders* on a superhuman level. Spring 2017

A Training Session With a NAO Robot

Trained a NAO Robot using machine learning techniques to educate a simple exercise session for elderly and disabled people. The NAO robot was able to determine whether an exercise was correctly executed or not in real-time by using an Xbox Kinect to record the skeletal joints of people and a classifier to compare these to the expected joint positions during the exercise session. Spring 2017