

# Swadhin Pradhan

MACHINE LEARNING ENGINEER & DATA SCIENTIST

1515 Summer Stone Drive, Apt. A, Austin, Texas - 78704, USA

☎ (+1) 737-222-8807 | ✉ swadhinjeet88@gmail.com | 🌐 www.swadhinpradhan.com | 📷 swadhin | 📧 swadhin

## Education

### The University of Texas at Austin

Austin, Texas, USA

PH.D. IN COMPUTER SCIENCE

2014 - 2020

- Thesis: Battery-free Wireless Sensing and Beyond
- Advisor: Lili Qiu
- CGPA: 3.92/4.0

### Indian Institute of Technology Kharagpur

Kharagpur, WB, India

M.S. (BY RESEARCH) IN COMPUTER SCIENCE AND ENGINEERING

2012 - 2014

- Thesis: Improving Localization and Energy Efficiency of Smartphone Applications
- Advisor: Niloy Ganguly
- CGPA: 9.66/10.0

### Jadavpur University

Kolkata, WB, India

B.E. (HONORS) IN INFORMATION TECHNOLOGY

2007 - 2011

- University Gold Medal
- CGPA: 9.45/10.0

## Experience

### DEVELOPMENT

#### Data Science Infrastructure Group, Cisco Meraki

San Francisco, CA, USA

SOFTWARE ENGINEER

October 2020 - Present

- Instrumental in developing Networks Like You feature at Meraki Dashboard which helps customers to better plan configurations by learning from its peers/industry best practices
- Building better indoor wireless localization at Meraki
- Enabling data intelligence and platforms for developing a more informed strategy

#### Interra Systems India Pvt. Ltd.

Kolkata, WB, India

SOFTWARE ENGINEER

May 2011 - Jan. 2012

- Successfully built an XML parser for a data format converter named OVC
- Built a front-end and command parser of a Graphical User Interface (GUI) viewer tool named Mirus3G

#### Interra Systems India Pvt. Ltd.

Kolkata, WB, India

SOFTWARE ENGINEERING INTERN

June 2009 - Aug. 2009

- Developed a SWIG interface for Python for a suite of C++ IP Libraries
- Developed a C++ template library to support easier management of products

### RESEARCH

#### NEC Labs America, Mobile Communications + Networking Group

Princeton, NJ, USA

RESEARCH INTERN

May 2017 - Oct. 2017

- Built a prototype of mobile voice assistant for future smart homes
- Two internal patents are filed based on the work

#### NEC Labs America, Mobile Communications + Networking Group

Princeton, NJ, USA

RESEARCH INTERN

May 2016 - Oct. 2016

- Built a prototype of RFID based seamless retail checkout system
- Built a RFID based battery-free touch interface
- Presented finding in ACM MobiCom 2017 and a workshop and filed a patent

#### Hewlett-Packard Enterprise Labs, Mobility & Networking Group

Palo Alto, CA, USA

RESEARCH INTERN

May 2015 - Aug. 2015

- Built a mobile application to assess notification importance based on user engagement level
- Presented findings in IEEE InfoCom 2017 and filed a patent

# Publications

## CONFERENCE/JOURNAL PAPERS [PEER-REVIEWED]

### 1. Rotation Sensing Using Passive RFID Tags

ACM MobiHoc

SWADHIN PRADHAN, SHUOZHE LI, AND LILI QIU

July 2021

- International Symposium on Theory, Algorithmic Foundations, and Protocol Design for Mobile Networks and Mobile Computing, July, 2021, Shanghai, China)

### 2. RTSense: Passive RFID based Temperature Sensing

ACM SenSys

SWADHIN PRADHAN, AND LILI QIU

Nov. 2020

- The 18th ACM Conference on Embedded Networked Sensor Systems, November, 2020, Yokohama, Japan)

### 3. RNN-based Room Scale Hand Motion Tracking

MOBICOM

WENGUANG MAO, MEI WANG, WEI SUN, LILI QIU, SWADHIN PRADHAN, AND YI-CHAO CHEN

Oct. 2019

- The 25th Annual International Conference on Mobile Computing and Networking (MobiCom), 2019, Los Cabos, Mexico

### 4. Combating Replay Attacks Against Voice Assistants

UBICOMP

SWADHIN PRADHAN, WEI SUN, GHUFRAN BAIG, AND LILI QIU

Sept. 2019

- Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies (IMWUT) Journal Issue 3, September, 2019 (Presented in the 2019 ACM International Joint Conference on Pervasive and Ubiquitous Computing (UBICOMP), September, 2019, London, UK)

### 5. Smartphone-based Indoor Space Mapping

UBICOMP

SWADHIN PRADHAN, GHUFRAN BAIG, WENGUANG MAO, LILI QIU, GUOHAI CHEN, AND BO YANG

Oct. 2018

- Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies (IMWUT) Journal Issue 2, June, 2018 (Presented in the 2018 ACM International Joint Conference on Pervasive and Ubiquitous Computing (UBICOMP), October, 2018, Singapore)

### 6. RIO: A Pervasive RFID-based Touch Gesture Interface

MOBICOM

SWADHIN PRADHAN, EUGENE CHAI, KARTHIK SUNDARESAN, LILI QIU, MOHAMMAD A. KHOJASTEPOUR, AND

SAMPATH RANGARAJAN

Oct. 2017

- The 23rd Annual International Conference on Mobile Computing and Networking (MobiCom), 2017, Snowbird, UT, USA

### 7. Understanding and managing notifications

INFOCOM

SWADHIN PRADHAN, LILI QIU, ABHINAV PARATE, AND KYU-HAN KIM

May 2017

- The 36th IEEE International Conference on Computer Communications (INFOCOM), 2017, Atlanta, GA, USA

### 8. ActivPass: Your Daily Activity is Your Password

CHI

SOURAV KUMAR DANDAPAT, SWADHIN PRADHAN, ROMIT ROY CHOUDHURY, NILOY GANGULY, AND BIVAS MITRA

April 2015

- The 33rd Annual ACM Conference on Human Factors in Computing Systems (CHI), 2015, Seoul, Korea
- Extensively covered in popular technical press such as MIT Technology Review, Boston Globe, The Guardian, American Banker etc.

### 9. Aggregating Inter-App Traffic to Optimize Cellular Radio Energy Consumption on Smartphones

COMSNETS

SWADHIN PRADHAN, SOURAV KUMAR DANDAPAT, NILOY GANGULY, BIVAS MITRA, AND PRADIPTA DE

Jan. 2015

- The 7th International Conference on COMMunication Systems & NETWORKS (COMSNETS), 2015, Bangalore, India

### 10. (Stable) Virtual Landmarks: Spatial Dropbox to enhance Retail Experience

COMSNETS

SWADHIN PRADHAN, ANANTH BALASHANKAR, NILOY GANGULY, AND BIVAS MITRA

Jan. 2014

- The 6th International Conference on COMMunication Systems & NETWORKS (COMSNETS), 2014, Bangalore, India

## WORKSHOP PAPERS [PEER-REVIEWED]

### 11. Konark: A RFID based system for enhancing in-store shopping experience

WPA, co-located with MobiSys

SWADHIN PRADHAN, EUGENE CHAI, KARTHIK SUNDARESAN, LILI QIU, AND SAMPATH RANGARAJAN

June 2017

- The 4th Workshop on Physical Analytics (WPA), co-located with the 15th ACM International Conference on Mobile Systems, Applications, and Services (MobiSys), 2017, Niagara Falls, NY, USA
- A Patent no. US20180307877A1 is filed by NEC Labs America based on this paper

### 12. Sprinkler: Distributed content storage for just-in-time streaming

Cellnet, co-located with MobiSys

SOURAV KUMAR DANDAPAT, SWADHIN PRADHAN, NILOY GANGULY, AND ROMIT ROY CHOUDHURY

June 2013

- The 2013 workshop on Cellular networks: operations, challenges, and future design (Cellnet), co-located with the 11th ACM International Conference on Mobile Systems, Applications, and Services (MobiSys), 2013, Taipei, Taiwan

## Honors & Awards

2019	<b>Recipient</b> , UT Austin Graduate Continuing Fellowship	Austin, Tx, USA
2018	<b>Student Travel Grant Recipient</b> , ACM MobiCom 2018	New Delhi, India
2018	<b>Student Travel Grant Recipient</b> , SIGCHI (for attending ACM UbiComp 2018)	Singapore
2017	<b>Student Travel Grant Recipient</b> , IEEE INFOCOM 2017	Georgia, USA
2011	<b>University Gold Medal Recipient</b> , For ranking 1st in class of B.E. (IT) in Jadavpur University	WB, India
2007	<b>Ranked within top 0.5% (approx. 100,000 aspirants)</b> , State engineering entrance examination	WB, India
2005	<b>Gold Medal Recipient</b> , District Topper in Secondary Examination and ranked 39 in the state	WB, India

## Patents

- 1. Battery-free touch-aware user input using RFID tags** US Patent: 10,346,655  
E. CHAI, **SWADHIN PRADHAN**, S. RANGARAJAN, M. KHOJASTEPOUR, AND K. SUNDARESAN July 2019
  - Patent is filed with NEC Labs America
  - Proposes a design of battery-free touch interface using RFID tags
- 2. Mobile Device Notification Scheduling** WIPO Patent: WO/2017/131748  
**SWADHIN PRADHAN**, A. PARATE, K.H. KIM, AND J. COOK Aug. 2017
  - Patent is filed with HPE Labs
  - Proposes a system which schedules notifications in mobile devices intelligently

## Technical Skills

<b>Programming Languages</b>	Python, C, Java, C++, SQL
<b>Software Engineering Knowledge</b>	ETL, Data Visualization, REST APIs, CI/CD, MLOps and DevOps
<b>Cloud Technologies</b>	Snowflake, AWS S3 / Lambda / Glue / Redshift, Kubeflow, Terraform
<b>Tools used</b>	OpenCL, MATLAB, NS3, Scikit-learn, Doxygen, SWIG, Pajek, NS2, FFMpeg, Flex, Bison
<b>Deep Learning Frameworks</b>	TensorFlow, PyTorch, Keras
<b>Hardwares used</b>	Embedded Platforms (Arduino, Raspberry Pi, HummingBoard Pro, BeagleBone), Ettus USRP
<b>Others</b>	Android Programming, GTK Programming, Socket Programming

## Interesting Projects

- Capturing ECG using wrist-worn IMUs** UT Austin, USA  
GRADUATE RESEARCH PROJECT March 2016 - May 2016
  - Attempted to measure ECG exploiting the vibrations of IMUs embedded in wrist-worn wearables
- Predicting Sarcasm in Tweets** UT Austin, USA  
GRADUATE COURSE PROJECT March 2015 - May 2015
  - Attempted to measure the level of sarcasm present in tweets
- Automatic Facial Expression Detection using EEG headset** UT Austin, USA  
GRADUATE COURSE PROJECT Oct. 2014 - Dec. 2014
  - Designed a system to detect the facial expression using the MUSE EEG headset
- A Browser plug-in for Search Trail Suggestion** IIT Kharagpur, India  
YAHOO HACK U June 2013
  - Designed a prototype which provided users with different series of search trail suggestions
- Analysing the impact of group performance in Test Cricket** IIT Kharagpur, India  
GRADUATE COURSE PROJECT Feb. 2013 - April 2013
  - Designed a novel metric to measure the impact of performance from the cricinfo data of test matches
- Setting up Low Cost GSM Network** Jadavpur University, India  
UNDERGRADUATE THESIS PROJECT July 2010 - March 2011
  - Designed and implemented a prototype of multi-hop delay-tolerant cellular network in a Java based simulation
- C to Assembly Translator** Jadavpur University, India  
UNDERGRADUATE COURSE PROJECT May 2010 - July 2010
  - Designed and implemented a whole pipeline of compiler and assembler for a subset of C language