

Suman Giri

🏠 6401 Bartlett Street,
🏠 Pittsburgh, PA 15217
📞 +1 440-574-1854
✉️ sgiri@andrew.cmu.edu
🌐 www.sumangiri.com

WORK EXPERIENCE

AUG 2011 – PRESENT

Research Assistant at INFER LAB

Dept. of Civil Engineering, Carnegie Mellon University, Pittsburgh, PA

-Currently working on green energy and smart home solutions. I work with Dr. Mario Bergés on Non-Intrusive Load Monitoring (NILM) where we look to disaggregate appliance level power consumption data by monitoring the power features at the main circuit level. An updated listing of the status of my project and publications can be found at www.inferlab.org/author/sgiri

-Under the Samsung-funded NILM project (08/2011- 08/2012), I worked on automating data labeling and training in supervised techniques for event-based NILM through the use of EMF sensors.

-Under the NSF-funded NILM project (08/2012-Present), I work on developing supervised frameworks for algorithms that can effectively disaggregate a few appliances that are of interest to the user. In addition, I am proposing an optimization framework (through LASSO formulation) that uses steady state features (current, voltage etc.) to estimate the appliances operating at any given time in a building. I am also working on developing a framework that can automatically deduce the possible state transitions in a particular appliance based on the aggregate power signature, for effective power estimation in event-based NILM.

SUMMER 2012

R&D Intern at SAMSUNG TELECOMMUNICATIONS AMERICA

Richardson, Dallas, TX

Worked at the Standards Research Lab with the Green Home task force on machine learning solutions to smart home initiatives- as an extension of my PhD research. Developed algorithms for event based disaggregation through novel feature extraction methods in on and off transients, two of which were patented.

SUMMER 2009

Market Research Intern at D&R INTERNATIONAL LTD.

Silverspring, MD

Worked as an Energy consultant with the market research team in developing a presentation to help the US Department of Energy develop possible standards for Battery Chargers and External Power Supplies. Helped write a market profile prompting all Utilities to promote the sales of Energy Star qualified Water heaters.

TEACHING EXPERIENCE

FALL 2012; FALL 2013

Teaching Assistant, 12-740 DATA ACQUISITION

Carnegie Mellon University

FALL 2012

Teaching Assistant, 12-741 DATA MANAGEMENT

Carnegie Mellon University

FALL 2013

Teaching Assistant, 39-611 ENERGY DEMAND &

UTILIZATION

Carnegie Mellon University

EDUCATION

AUG 2011 – DEC 2015 (EXP.)

Doctor of Philosophy

ADVANCED INFRASTRUCTURE SYSTEMS

*Carnegie Mellon University
Pittsburgh, PA*

AUG 2011 – DEC 2013 (EXP.)

Master of Science

CIVIL ENGINEERING

*Phi Kappa Phi HONORS
Carnegie Mellon University
Pittsburgh, PA*

AUG 2007 – MAY 2011

Bachelor of Science

PHYSICS, MATHEMATICS

*Phi Beta Kappa HONORS
Oberlin College
Oberlin, OH*

COMPUTER SKILLS

Programming	MATLAB, PYTHON
Documentation	L ^A T _E X, OpenOffice, Microsoft Office
Operating Systems	Linux, Mac OSX, MS Windows
Other	Mathematica, LabVIEW, Basic R

PUBLICATIONS

S. Giri, M. Bergés, A.Rowe, “Towards automated appliance recognition using an EMF sensor in NILM platforms” in *Advanced Engineering Informatics (AEI)*, 2013.

N. Rajagopal, **S. Giri** A.Rowe and M. Bergés, “A Magnetic Field-based Appliance Metering System” in *ACM/IEEE Third International Conference on Cyber-Physical Systems*, Philadelphia, PA, USA, 2012.

S. Giri, M. Bergés, “Towards automatic classification of appliances: Tackling cross talk in EMF sensors using blind source separation techniques,” in *Proceedings of the 2013 International EG-ICE Workshop on Intelligent Computing*, Vienna, Austria, 2013.

S. Giri, P.H. Lai, M. Bergés, “Novel Techniques For ON and OFF states detection of appliances for Power Estimation in Non-Intrusive Load Monitoring”, in *ISARC 2013 The 30th International Symposium on Automation and Robotics in Construction and Mining*, Montréal, Canada, 2013.

S. Giri, M. Bergés, “A study on the feasibility of automated data labeling and training using an EMF sensor in NILM platforms.”, in *Proceedings of the 2012 International EG-ICE Workshop on Intelligent Computing*, Herrsching, Germany, 2012. **Best Paper Award**

RELATED COURSEWORK

GRADUATE - Machine Learning (Masters Level)
- Machine Learning (PhD Level)
- Machine Learning for Signal Processing
- Pattern Recognition
- Data Acquisition
- Data Management

UNDERGRADUATE - Python
- Project Management
- Optimization
- Information Theory

AWARDS

**CARNEGIE INSTITUTE OF TECHNOLOGY
DEAN'S FELLOWSHIP**
Carnegie Mellon University – 2012

**DORIS BARON GRANT FOR
ENVIRONMENTAL RESEARCH**
Oberlin College– 2009

**CREATIVITY AND LEADERSHIP (C&L)
AWARD FOR ENTREPRENEURSHIP**
Oberlin College–summer 2010

LEADERSHIP ROLES

GRADUATE STUDENT ADVISORY COUNCIL
Carnegie Mellon University
Representative, 2012-Present

**VOLUNTEER ESL TEACHER FOR
BHUTANESE REFUGEES**
Bellevue, Pittsburgh
Organizer, Teacher, 2011-Present

REFERENCES

ACADEMIA **MARIO E. BERGÉS**
Assistant Professor,
Civil and Environmental Engineering
Carnegie Mellon University
E-mail: marioberges@cmu.edu
Phone: +1 (412) 268-4572

ANTHONY ROWE
Assisntant Professor,
Electrical and Computer Engineering
Carnegie Mellon University
E-mail: agr@ece.cmu.edu

INDUSTRY **PO-HSIANG LAI**
Senior Research Engineer,
Samsung Telecommunications, America
E-mail: s.lai@sta.samsung.com
Phone: +1 (972) 761-7000