

Suman Giri, Ph.D.

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WORK EXPERIENCE

MAY 2015 – PRESENT

Senior Informatics Analyst at AETNA: DATA SCIENCE
Pittsburgh, PA & Hartford, CT

I work at the intersection of big-data analytics and data-engineering as part of the **consumer analytics** team. Following is a highlight of some of the projects I have actively contributed to:

- **Agile + Onboarding:** Built a comprehensive guide to all data sources and databases in Data Science for self-learning during personal onboarding, which was later shared to subsequent new hires. Helped my team transition towards an Agile framework.
- **Plan Recommendation:** Rewrote the R-code-base for the [health-insurance] plan recommender engine to extend its capability to integrate complex plan logic, and to make the code scalable and amenable to unit-testing.
- **Marketing Mix Modeling:** Built an attribution model to estimate the effect of marketing media-spend on member conversion. In addition, using that model, created a planning tool for optimal budget allocation across different media channels to maximize member conversion.
- **Consumer Segmentation:** Clustering of consumers based on demographics and utilization patterns. In addition to facilitating ad-hoc requests on data/logic, expanded and maintained the [Tableau] dashboard that presents the insights from segmentation.
- **Deductible-spend insight:** Built a data-pipeline and dashboard for deductible-spend data from consumers to get insight into in-network versus out-of-network service utilization before and after the deductible was met.

- 🏆 **Third** place: Aetna IT Hackathon (2015)
- 🏆 **Second** place: Hackathon of Champions (2016)
- 🔧 HADOOP, PYTHON, R, SPARK, TABLEAU, R-SHINY, HIVE, PIG, SHELL SCRIPTING

SUMMER 2012

R&D Scholar 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. Developed algorithms for event based energy disaggregation through novel feature extraction methods in on and off transients, two of which were **patented**.

WORK EXPERIENCE

MAY 2013 – MAY 2015

Strategic Advisor/ Chief Data Scientist at EEME
Pittsburgh, PA

- **EEME** is a Carnegie Mellon spin-out that analyzes electricity data from smart-meters to provide actionable insights to different stake-holders in the energy efficiency chain. I designed the core set of algorithms for disaggregating energy data, and creating appropriate recommendations.
- I have represented the startup in accelerator programs and investor forums. I advise the company in strategic decisions, and help with recruiting.

AUG 2011 – MAY 2015

Graduate Research Assistant at INFER LAB
Carnegie Mellon University, Pittsburgh, PA

- I worked on green energy and smart home solutions. My PhD research was on Non-Intrusive Load Monitoring (NILM) where I used **data mining** and **signal processing** techniques to estimate appliance-level electricity consumption data by monitoring the power consumption at the main circuit level.

- 🏆 Best Paper Award at EG-ICE 2012
- 🔧 MATLAB, PYTHON, LABVIEW

MAY 2014 – MARCH 2016

Social Entrepreneur at RAMAK INTERNATIONAL, LLC
Boston, MA

- I co-founded **Ramak International**, with the goal of solving some of the developing world's most challenging problems through innovation in design. I helped design and market two products: (1) **MyChair** and (2) **LeanChair** targeted at improving educational infrastructure in Nepal.

- 🏆 Social Impact Award at **LaunchU 2015**.

EDUCATION

M.S., Ph.D. Advanced Infrastructure Systems
2011-2015 CARNEGIE MELLON UNIVERSITY

B.A. Physics, Mathematics
2007-2011 OBERLIN COLLEGE

SELECTED PUBLICATIONS

S. Giri, “A Framework for Estimating Energy Consumed by Electric Loads Through Minimally Intrusive Approaches”, **PhD Thesis**, *Carnegie Mellon University*, 2015.

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

S. Giri, M. Bergés, “An energy estimation framework for event-based methods in Non-Intrusive Load Monitoring” in *Energy Conversion and Management (ECM)*, 2015

N. Rajagopal, **S. Giri**, A.Rowe and M. Bergés, “A Magnetic Field-based Appliance Metering System” in *ACM/IEEE 3rd Intl. Conference on Cyber-Physical Systems*, Philadelphia, PA, USA, 2012.

J.Gao, **S. Giri**, E.C. Kara and M. Bergés, “PLAID: a public dataset of high-resolution electrical appliance measurements for load identification research” in *Proceedings of the 1st ACM Conference on Embedded Systems for Energy-Efficient Buildings*, Memphis, Tennessee, USA, 2014.

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**

TEACHING EXPERIENCE

Teaching Assistant at CARNEGIE MELLON UNIVERSITY

12-740 DATA ACQUISITION	FALL 2012-2014
12-741 DATA MANAGEMENT	FALL 2012
39-611 ENERGY DEMAND & UTILIZATION	FALL 2013
12-600 AUTOCAD	FALL 2014

RELATED COURSEWORK

Machine Learning, Machine Learning for Signal Processing, Data Acquisition, Data Management, Project Management, Information Theory, Optimization, Engineering Economics, Micro-Economics, Accounting.

LEADERSHIP ROLES

GRADUATE STUDENT ADVISORY COUNCIL
Carnegie Mellon University
Representative, 2012-2015

VOLUNTEER ESL TEACHER FOR BHUTANESE REFUGEES
Bellevue, Pittsburgh
Organizer, Teacher, 2011-2015

HONORS & AWARDS

PHI BETA KAPPA HONOR SOCIETY
Oberlin College – 2011

PHI KAPPA PHI HONOR SOCIETY
Carnegie Mellon University – 2013

JOHN AND CLAIRE BERTUCCI GRADUATE FELLOWSHIP
Carnegie Mellon University – 2014

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

REFERENCES

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Civil and Environmental Engineering
Carnegie Mellon University
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