

Samar ABBAS

PERSONAL DATA

PLACE AND DATE OF BIRTH: Gujranwala, Pakistan | 15 March 1981
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RESEARCH EXPERIENCE

Inverted HVAC: Greenifying Older Buildings, One Room at a Time (Accepted in ACM TOSN'18)

Emerging countries predominantly rely on room-level air conditioning units (window ACs, space heaters, ceiling fans) for thermal comfort. These distributed units have manual, decentralized control leading to suboptimal energy usage for two reasons: excessive setpoints by individuals, and inability to interleave different conditioning units for energy savings. We propose a novel inverted HVAC approach: cheaply retrofitting these distributed units with “on-off” control and providing centralized control augmented with room and environmental sensors.

Sampling Based Efficient Algorithm to Estimate the Spectral Radius of Large Graphs (Accepted in HotPost 2017 In conjunction with IEEE ICDCS'17)

Spectral radius is largest absolute eigen value of graph. It is used to estimate many properties of graph like vulnerability of graph, coloring of graph etc. Finding spectral radius is challenging in case of large graphs. This research resulted in estimation of spectral radius using number of closed walks of length four.

A Matching-based Framework for Causal Predictive Differential Modelling

Differential modeling studies differences in outcomes observed in groupings of data and has several applications like targeted marketing (uplift modeling) and social discrimination analysis. Usually such studies are retrospective in nature rather than being controlled experiments; hence spectrum or selection bias can distort the true or causal effect of group membership. We devise a matching algorithm to find stable and near-optimal pairings in each group. The results reveal that our framework produces better performances in comparison to others and is easy to apply in practice.

Estimating Remaining Useful Life of Bearing using Markov Models

Bearing life dataset from IEEE PHM 2012 has irregular data recording interval. In this scenario application of Markov Models is not directly applicable. So we transformed data such that there are some regularities in data and applied Hidden Markov Model. Right now results on training and some of testing datasets are very accurate. One key observation is that training datasets are few and it doesn't capture a reasonable training population. So now we are focused on estimating the trend of bearing population with as little as information we have.

Identification of Persuadable Respondents (MS Thesis)

Common causal analysis attempts to find the impact of a given treatment. Such studies are not aimed at finding the respondents with high probability of response to a given treatment. My MS thesis is focused on identification of respondents who are highly likely to respond better. This study not only tries to capture the pattern of persuadable respondents but also tries to overcome limitations of many of existing algorithms.

EDUCATION

- JUNE 2016 Master of Science in COMPUTER SCIENCE, **LUMS University**, Pakistan
Major: Data Sciences
Thesis: "Identification of Persuadable Respondent"
Advisor: Prof. Asim KARIM & Prof. Arif ZAMAN
GPA: 3.90/4
- SEPTEMBER 2007 Master Degree in OPERATIONS RESEARCH **Punjab University**, Pakistan
Thesis: "Site Allocation of COCA COLA warehouse" |
Advisor: Air Commodore Muhammad AVAIS
GPA: 4/4
- SEPTEMBER 2000 Undergraduate Degree in MATHEMATICS and PHYSICS
Punjab University, Pakistan
GPA: 3.7/4

MEDAL, SCHOLARSHIPS AND CERTIFICATES

- MAY. 2016 **Gold Model** in MS
MAY. 2016 Dean Honor List MS
SEPT. 2015 Scholarship for graduate students with an outstanding curriculum(\$ 2,000)
SEPT. 2014 Scholarship for graduate students with an outstanding curriculum (\$ 2,000)
SEPT. 2010 **Gold Medal** in Masters in Operations Research
SEPT. 2000 Distinction in B.Sc Mathematics

EDUCATION WITHOUT DEGREES

I was fascinated by a course "Learn How to Learn". It increased my interest in understanding the art of teaching and learning. This art forced me to further understand the psychology of human so I studied and listened reasonable material, following is list of few of items:

- How to Win Friends and Influence People, by Dale CARNEGIE
- No Excuses, by Brian BRIAN TRACY
- Riasing a Positive Child in a Negative World, by Zig ZIGGLER

COMPUTER SKILLS

Knowledge: R, PYTHON, MATLAB, JAVA, ubuntu, \LaTeX

INTERESTS AND ACTIVITIES

Learning to teach and apply in real world applications
PC games, Travelling