Seojin Bang

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RESEARCH INTEREST

My research interest is to understand human disease based on integrative data analysis (multi-view data analysis) using machine learning and deep learning approaches. In particular, I am interested in improving clinical decision making by combining different types of data such as text and image as well as quantitative data collected from high-throughput platforms, and furthermore, compressing human knowledge in an ensemble into the model.

EDUCATION

Present	**Carnegie Mellon University**	
	PhD student in Computational Biology	Advisor: Wei Wu
2015	**University of Connecticut**	
	MS in Statistics	Advisor: Haim Bar
2013	**Seoul National University**, Korea	
	MS in Statistics	Advisor: Taesung Park
2010	**Sungkyunkwan University**, Korea	
	BS in Mathetmatical Education · BE in Statistics	

PUBLICATIONS

Differential responses to systemic corticosteroids as assessed by multi-view cluster analysis of data from the severe asthma research program.
in progress, 2018.
Wu, Wei and **Bang**, **Seojin** and Bleecker, Eugene and Castro, Mario and Denlinger, Loren and Erzurum, Serpil and Fahy, John and Fitzpatrick, Anne and Gaston, Ben and Hastie, Annette and Israel, Elliot and Jarjour, Nizar and Kerr, Sheena and Levy, Bruce Meyers, Deborah and Moore, Wendy and Peters, Michael and Phipatanakul, Wanda and Sorkness, Ronald and Wenzel, Sally.

A mixture model to detect edges in sparse co-expression graphs.
arXiv preprint arXiv:1804.01185, 2018.
Bar, Haim and **Bang**, **Seojin**.

Multiple kernel k-means clustering using min-max optimization with l_2 regularization.
arXiv preprint arXiv:1803.02458, 2018.
Bang, **Seojin** and Wu, Wei.

Naïve bayes ensemble: A new approach to classifying unlabeled multi-class asthma subjects.
In *Bioinformatics and Biomedicine (BIBM), 2016 IEEE International Conference on*, pages 460–465. IEEE, 2016.
Bang, **Seojin** and Wu, Wei.

Ethnic variability in the allelic distribution of pharmacogenes between korean and other populations.
Pharmacogenetics and genomics, 22(12):829–836, 2012.
Kim, In-Wha and Im Kim, Kyung and Chang, Hyeu-jin and Yeon, Bora and **Bang**, **Seojin** and Park, Taesung and Kwon, Ji-sun and Kim, Sangsoo and Oh, Jung Mi.

Joint selection of snps for improving prediction in genome-wide association studies.
In *Bioinformatics and Biomedicine Workshops (BIBMW), 2012 IEEE International Conference on*, pages 852–858. IEEE, 2012.
Bang, **Seojin** and Kim, Yong-Gang and Park, Taesung.

RESEARCH EXPERIENCE

Project title here 2012 – 2013
Research Assistant for Dr. Wu *Carnegie Mellon University*

· Multiview Learning. add detail

Project title here 2018
Research Intern *Petuum*

· add description

Gene network analysis 2012 – 2013
Research Assistant for Dr. Bar *University of Connecticut*

· add description

Dimensional Reduction Analysis of Ultra High-dimensional Bioinformatics Data 2012 – 2013
Research Scientist *Seoul National University*

· Developed a joint variable selection method in high-dimensional data using the elastic-net regularization technique

Complex Biomarker Analysis for Pancreatic Cancer Diagnosis Modeling 2012 – 2013
Research Scientist *Seoul National University*

· Identified complex biomarkers of miRNA, mRNA, and protein for pancreatic cancer diagnosis using a statistical approach
· Investigated different subtypes of intraductal papillary mucinous neoplasm (IPMN) using longitudinal clinical data using a time dependent survival model
· Developed a prognostic and prediction model with miRNA, mRNA, and protein markers using a statistical approach.

The Pharmacometric Study (PK/PD Modeling & Simulation) of Immune modulating Agents Utilizing Pharmacogenomics 2012
Research Assistant for Dr. Park *Seoul National University*

· Examined differences in allele frequencies of pharmacogenes among populations using the size-modified index.

WORKING EXPERIENCE

Jan 2016 – Present	**Research Assistant** with Prof. Wei Wu *Computational Biology Department, Carnegie Mellon University*, Pittsburgh, PA
May 2018 – Present	**Research Intern** in Artificial Intelligence and Machine Learning Solution for Healthcare *Petuum*, Pittsburgh, PA
Aug 2013 – Aug 2015	**Research Assistant** with Prof. Haim Bar *Department of Statistics, University of Connecticut*, Storrs, CT
Feb 2013 – Aug 2013	**Research Scientist** in Bioinformatics and Biostatistics *BIBS at Seoul National University*, Korea
Aug 2011 – Feb 2013	**Research Assistant** with Prof. Taesung Park *Department of Statistics, Seoul National University*, Korea

SOFTWARES

R-package	**MKKC**: multiple kernel k-means clustering on a multi-view data `https://github.com/SeojinBang/MKKC`

LaTeX template **TidyCV**: simple and tidy LaTeX template for your curriculum vitae
`https://github.com/SeojinBang/TidyCV`

TECHNICAL STRENGTHS

Computer Languages	Python, R, MATLAB
Software & Tools	Git, HTML, LaTeX, Excel

HONORS AND AWARDS

2018	**The Center for Machine Learning and Health Fellowships in Digital Health** a full tuition and stipend for 12 months and $3,000 of research-related expenses
2013	The Korean Statistical Society Paper Awards (3st Place)
2012	The Korean Statistical Society Poster Awards (1st Place)
2006 – 2010	**National Science and Engineering Undergraduate Scholarship** a full tuition for 8 semesters 2006 – 2010 an additional $500 grant for a high GPA 2009 an additional $500 grant for a high GPA 2008

PROFESSIONAL SERVICE

2018	**Subreviewer**, *The 9th ACM Conference on Bioinformatics, Computational Biology, and Health Informatics (ACM BCB)*
2012	**Staff**, *International Symposium on Statistical Genetics*, Korea
2012	**Staff**, *Microarray Analysis Workshop: Statistical Analysis using R language*, Korea
2011	**Staff**, *The 2011 Spring Conference of the Korean Statistical Society*, Korea

TEACHING EXPERIENCE

Carnegie Mellon University Teaching Assistant

- 2018 Quantitative Cell and Molecular Biology Lab
- 2017 Computational Methods for Proteogenomics and Metabolomics

University of Connecticut Teaching Assistant

- 2014 Mathematical Statistics
- 2014 Introduction to Mathematical Statistics
- 2013 Elementary Concepts of Statistics
- 2013 Introduction to Statistics I and II
- 2013 Statistical Methods

Seoul National University, Korea Teaching Assistant

- 2012 Statistics Laboratory
- 2012 Regression and Analysis and Laboratory
- 2011 Statistics

Bongyoung Girls' Middle School, Korea Student Teacher

- 2009 Middle School Mathematics

Sungkyunkwan University, Korea Teacher

- 2006 Alternative Elementary/Middle School Mathematics