Bonggun Shin

Chief AI Officer and Co-founder at Deargen Inc.

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Education

May 2020 **Emory University**, *Atlanta, GA*, *Ph.D in Computer Science*.
Thesis: Deep learning approaches toward computerized drug discovery
Chris Schoettle Graduate Research Award
Advisor: Dr. Joyce C. Ho

2019 **Emory University**, *Atlanta, GA*, *MS in Computer Science*.

2009 **KAIST**, *Daejeon, South Korea*, *MS in Electrical Engineering*.

2006 **Illinois Institute of Technology**, *Chicago, IL* , *BS in Computer Engineering*.

Experience

Aug/'19–present **Chief AI Officer/Co-founder**, *Deargen*, Seoul, South Korea.
- Proposed new drug candidates that may act on the novel coronavirus (**Tensorflow**).
  - **Computational and Structural Biotechnology Journal** 2019

Aug/'15–May/'20 **Research Assistant**, *Atlanta, GA*, Emory University.
- Proposed a new optimized drug generation method (**Tensorflow**)
  - **Submitted**
- Proposed a new way of automation of schema mapping (**Tensorflow, PyTorch**)
  - **Submitted**
- Proposed a new SOTA drug target interaction method (**Tensorflow**)
  - **MLHC** 2019
- Proposed a new multimodal ensemble method for predicting readmission(**Keras**).
  - **IEEE BHI** 2019
- Proposed a SOTA sentiment analysis method for classifying tweets (**Tensorflow**).
  - **WASSA Workshop in EMNLP** 2017
- Proposed a new clinical reports classification method (**Tensorflow**).
  - **IJCNN** 2017

2016–2018 **Teaching Assistant**, *Atlanta, GA*, Emory University.
- Fall 2017, CS534, **Machine Learning**, Instructor: Dr. Joyce Ho
- Spring 2017, CS571 **Natural Language Processing**, Instructor: Dr. Jinho Choi
- Fall 2016, CS557 **Artificial Intelligence**, Instructor: Dr. Eugene Agichtein
- Spring 2016, CS329 **Computational Linguistics**, Instructor: Dr. Jinho Choi
- Fall 2015, CS323 **Data Structures and Algorithms**, Instructor: Dr. Jinho Choi

Summer/'16, Summer/'18 **Research Intern**, *Deargen*, Seoul, South Korea.

- Invented a new prognosis-related feature selection algorithm in human lung adenocarcinoma transcriptomes.(**Keras**)
  - **Frontiers in Genetics** 2019
- Invented a new cancer biomarker selection method that not only outperforms the previous SOTA by 3%p, but also aligns with the new markers recently discovered in the literature.(**Keras**)
  - **Korean Patent**/ **Nature Scientific Report** 2019

2017 Summer **Research Intern**, *VISA Research*, Palo Alto, CA.

- Invented a new embedding compression method ($\times 80$ reduction with better performances) (**Keras**).
  - **US Patent**/ **IJCAI** 2019

Feb/'15– Aug/'15 **Software Engineer**, *December&Company*, Seoul, South Korea.

- Amended the pre-existing broker dependent FEP(Front end protocol) communication module to be abstract so that it can connect to other brokers
- Added another security broker FEP module to the trading platform
- Researched NLP based trading opportunity and provided useful guidance
- Initiated smart execution strategy project that would bring additional profits to the company

Publications

[Google Scholar]: http://scholar.google.com/citations?user=j9nUzZAAAAAJ

* indicates equal contribution

[1] BR Beck, **B Shin**, Y Choi, S Park, and K Kang. "Predicting commercially available antiviral drugs that may act on the novel coronavirus (SARS-CoV-2) through a drug-target interaction deep learning model", Computational and Structural Biotechnology Journal, 2020.

[2] **B Shin***, S Park*, WS Shim, Y Choi, K Kang, K Kang. "Cascaded Wx: a novel prognosis-related feature selection framework in human lung adenocarcinoma transcriptomes" Frontiers in Genetics, 2019

[3] **B Shin***, S Park*, S Park, JH Hong, HJ An, SH Chun, K Kang, YH Ahn, YH Ko, and K Kang. "Wx: a nn-based feature selection algo. for transcriptomic data", Nature Scientific Report, 2019

[4] **B Shin**, S Park, K Kang, and JC Ho "Self-Attention Based Molecule Representation for Predicting Drug-Target Interaction" Machine Learning for Healthcare, 2019

[5] **B Shin**, H Yang, and JD Choi "The Pupil Has Become the Master: Teacher-Student Model-Based Word Embedding Distillation with Ensemble Learning" IJCAI, 2019

[6] **B Shin**, J Hogan, AB Adams, RJ Lynch, RE Patzer, JD Choi, "Multimodal Ensemble Approach to Incorporate Various Types of Clinical Notes for Predicting Readmission", IEEE-EMBS Biomedical and Health Informatics, 2019

[7] **B Shin**, FH Chokshi, T Lee and JD Choi "Classification of radiology reports using neural attention models" IJCNN, 2017

[8] **B Shin**, T Lee and JD Choi "Lexicon Integrated CNN Models with Attention for Sentiment Analysis" EMNLP Workshop (WASSA), 2017

[9] **B Shin** and AH Oh "Bayesian group nonnegative matrix factorization" Technical Report 1212.4347, ArXiv, 2012

[10] **B Shin** and S Jo, "Pattern-Preserving-based Motion Imitation for Robots" Ubiquitous Robots and Ambient Intelligence, 2011, **[Best Paper Finalist]**

[11] BG Shin, T Kim, S Jo, "Non-invasive brain signal interface for a wheelchair navigation", ICCAS, 2010

Presentations

Dec 2019 **Guest Lecture**, *Deep learning based drug discovery*, CS 534: Machine Learning, Emory University.

Sep 2019 **Invited Talk**, *Deep learning based drug-protein interaction*, Naver TechTalk, Naver.

Honors and Awards

Apr 2020 **Chris Schoettle Graduate Research Award**, *Emory University*.

Nov 2011 **Best Student Paper Finalist**, *International Conference on URAI*.

Sep 2011 **Best TA Award**, *KAIST*.

2010–2011, 2007–2008 **National Fellowship**, *KAIST*.

Sep 2011 **Student Travel Grant**, *RL Competition, ICML workshop*.

2004–2006 **Dean's List, International Scholarship**, *IIT*.

Fall 2004 **Research Grant**, *Korea Science and Engineering Foundation*.

Languages

Korean Native

English Professional working proficiency

Skills

Programming python, C/C++, Matlab, R, java, Assemblers, LaTeX

DeepLearning Keras, Tensorflow, PyTorch

Data Science scikit-learn, Pandas