Bonggun Shin

CEO at Deargen USA Inc.

✉ *bonggun.shin@deargen.me*

Experience

Aug/'21–present **Chief Executive Officer**, *Deargen USA*, Atlanta, GA.
- Initiating various research collaborations

May/'20–present **Chief AI Officer/Co-founder**, *Deargen*, Seoul, South Korea.
- Initiated various research collaborations
- Proposed a new cross attention model - **MLHC** 2021
- Proposed a new optimized drug generation method - **ACM Chil** 2021

Aug 2019–May 2020 **Advisor**, *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 way of automation of schema mapping - **ADBIS** 2021
- Proposed a new SOTA drug target interaction method - **MLHC** 2019
- Proposed a new multimodal ensemble method - **IEEE BHI** 2019
- Proposed a SOTA tweet sentiment analysis method - **WASSA WS in EMNLP** 2017
- Proposed a new clinical reports classification method - **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

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*.

Publications

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

* indicates equal contribution

[1] J Zhang, **B Shin**, JD Choi and J Ho. "SMAT: An Attention-based Deep Learning Solution to the Automation of Schema Matching" Proceedings of the 25th European Conference on Advances in Databases and Information Systems, 2021

[2] Y Kim and **B Shin**. "An Interpretable Framework for Drug-Target Interaction with Gated Cross Attention" Machine Learning for Healthcare, 2021

[3] **B Shin**, S Park, JY Bak, JC Ho. "Controlled Molecule Generator for Optimizing Multiple Chemical Properties" ACM Conference on Health, Inference, and Learning, 2021

[4] Y Choi, **B Shin**, K Kang, S Park, and BR Beck. "Target-Centered Drug Repurposing Predictions of Human Angiotensin-Converting Enzyme 2 (ACE2) and Transmembrane Protease Serine Subtype 2 (TMPRSS2) Interacting Approved Drugs for Coronavirus Disease 2019 (COVID-19) Treatment through a Drug-Target Interaction Deep Learning Model", Viruses, 2020.

[5] S Park, YH Ko, B Lee, **B Shin**, BR Beck. "Molecular optimization of phase III trial failed anticancer drugs using target affinity and toxicity-centered multiple properties reinforcement learning", Clinical Cancer Research, 2020.

[6] 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.

[7] **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

[8] **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

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

[10] **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

[11] **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

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

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

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

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

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

Talks

June 2021 **Invited Talk**, *Interdisciplinary Research for Innovation and Entrepreneurship*, The Korean American Scientists and Engineers Association.

May 2021 **Tech Talk**, *Toward Structure Free Drug Discovery*, The Korean Society Nonclinical Study.

Apr 2021 **Tech Talk**, *Toward Structure Free Drug Discovery*, The Korean Society for Clinical Pharmacology and Therapeutics.

Apr 2021 **Guest Lecture**, *Deep Learning based Healthcare Applications*, The Korean Intellectual Property Office.

Oct 2020 **Tech Talk**, *Deep Learning based Drug Discovery*, GTC Korea 2020, NVIDIA.

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*, Clova AI TechTalk, Naver.

Academic Services

Reviewer **NeurIPS2020-2021, ICML2021, MLHC2020**.

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