

Yongju Lee

Electrical and Computer Engineering, Seoul National University
Homepage : <http://taliq.github.io>

Email : taliq.lee@gmail.com
GitHub : <https://github.com/taliq/>

RESEARCH BACKGROUND AND INTEREST

With hands-on experience in dry/wet lab and knowledge in deep learning techniques and the biomedical field, adept at performing interdisciplinary research that requires generating, processing, and interpreting biomedical data. Interested in **knowledge-infusion learning, causal inference, graph neural network, computational pathology, bioinformatics, single-cell, spatial omics, tumor microenvironment**. Proficient in developing deep learning models from scratch (using Pytorch); setting up bioinformatics pipeline to analyze molecular data including DNA, and RNA; and designing biomolecular experiments including cell culture and single-cell DNA/RNA-seq.

EDUCATION

- **Seoul National University** Seoul, Republic of Korea
Doctor of Engineering in Electrical and Computer Engineering Sep. 2016 – Aug. 2022
- **Sogang University** Seoul, Republic of Korea
Bachelor of Engineering in Electrical Engineering Mar. 2012 – Feb. 2016

SELECTED PUBLICATIONS

1. **Y. Lee**[†], JH. Park[†], S. Oh[†], K. Shin[†], J. Sun, M.J ung, C. Lee, H. Kim, J. Chung, KC. Moon, S. Kwon, Derivation of prognostic contextual histopathological features from whole-slide images of tumours via graph deep learning. *Nature Biomedical Engineering*, 2022, Accepted
Featured in *Research Briefing of Nature Biomedical Engineering*
2. A. C. Lee[†], **Y. Lee**[†], A. Choi[†], H. Lee[†], K.Shin, H.Lee, JY. Kim, HS. R, HS. K, SY. R, S. Lee, J. Chuen, DK. Yoo, S. Lee, H. Choi, T. Ryu, H. Yeom, N. Kim, J. Noh, Y. Lee, I. Kim, S. Bae, J. Kim, W. Lee, O. Kim, Y. Jung, C. Kim, SW. Song, Y. Choi, J. Chung, BG. Kim, W. Han, S. Kwon, Spatial epitranscriptomics reveals A-to-I editome specific to cancer stem cell microniches. *Nature Communications*, 2022

HONORS AND AWARDS

- Best research awards: The Korean Biochip Society, 2020
- Grand Prize in National R&D Real Challenge Program, 2020
- Scholarships for Academic Excellence, 2012

TEACHING EXPERIENCE

- **Deep learning for next-generation health care** Seoul National University
Teaching assistant 2022
- **Introduction to python** Seoul National University
Teaching assistant 2019
- **Nano-biomedical engineering** Seoul National University
Teaching assistant 2018
- **Biomedical electronic and computer engineering** Seoul National University
Teaching assistant 2016, 2018
- **Single-cell omics analysis and NLP model for amino acid** Seoul National University
B.S. Thesis advisor 2018, 2019, 2022

REFERENCES

- **Prof. Sunghoon Kwon** skwon@snu.ac.kr
Ph.D. Advisor *Electrical and Computer Engineering, Seoul National University*
- **Prof. Jeonghwan Park** hopemd@hanmail.net
Collaborator *Pathology, Seoul National University College of Medicine*

PUBLICATIONS IN JOURNALS

First and co-first author articles

1. **Y. Lee**[†], JH. Park[†], S. Oh[†], K. Shin[†], J. Sun, M.J ung, C. Lee, H. Kim, J. Chung, KC. Moon, S. Kwon, Derivation of prognostic contextual histopathological features from whole-slide images of tumours via graph deep learning. *Nature Biomedical Engineering*, 2022
Featured in *Research Briefing of Nature Biomedical Engineering*
2. A. C. Lee[†], **Y. Lee**[†], A. Choi[†], H. Lee[†], K.Shin, H.Lee, JY. Kim, HS. R, HS. K, SY. R, S. Lee, J. Chuen, DK. Yoo, S. Lee, H. Choi, T. Ryu, H. Yeom, N. Kim, J. Noh, Y. Lee, I. Kim, S. Bae, J. Kim, W. Lee, O. Kim, Y. Jung, C. Kim, SW. Song, Y. Choi, J. Chung, BG. Kim, W. Han, S. Kwon, Spatial epitranscriptomics reveals A-to-I editome specific to cancer stem cell microniches. *Nature Communications*, 2022
3. A. C. Lee[†], J. Svedlund[†], E. Darai[†], **Y. Lee**[†], D. Lee, H. Lee, S. Kim, O. Kim, H. Bae, A. Choi, S. Lee, Y. jeong, S W.Song, Y. Choi, H. Yeom, C. S. Lee, W. Han, D S. Lee, J, Jang, N. Madaboosi, M. Nilsson, S. Kwon, OPENchip: an on-chip in situ molecular profiling platform for gene expression analysis and oncogenic mutation detection in single circulating tumour cells. *Lab on a chip*, 2020
4. A. C. Lee[†], **Y. Lee**[†], D. Lee, S. Kwon, Divide and conquer: A perspective on biochips for single-cell and rare-molecule analysis by next-generation sequencing. *APL Bioengineering*, 2019

Co author articles

1. Y. Kim[†], I.H. Song[†], H.Lee, S. Kim, D.H.Yang, N.Kim, D.Shin, Y.Yoo, K.Lee, D.Kim, H.Jung, H.Cho, H.Lee, T.Kim, J.H.Choi, C.Seo, S.I.Han, Y.J.Lee, Y.S.L, H.Yoo, **Y. Lee**, J.H.Park, S.Oh, G.Gong, Challenge for diagnostic assessment of deep learning algorithm for metastases classification in sentinel lymph nodes on frozen tissue section digital slides in women with breast cancer *Cancer Research and Treatment*, 2020
2. O.Kim [†], D.Lee [†], A.C.Lee [†], **Y. Lee**, H.J.Bae, H.Lee, R.N.Kim, W.Han, S. Kwon, Whole genome sequencing of single circulating tumor cells isolated by applying a pulsed laser to cell-capturing microstructures. *Small*, 2019
3. S.W.Song [†], S.D.Kim [†], D.Y.Oh, **Y. Lee**, A.C.Lee, Y.Jeong, H.J.Bae, D.Lee, S.Lee, J. Kim, S. Kwon, One-step generation of a drug-releasing hydrogel microarray-on-a-chip for large-scale sequential drug combination screening. *Advanced Science*, 2019
4. S. Kim [†], A.C.Lee [†], H.Lee [†], J.Kim, Y.Jung, H.S.Ryu, **Y. Lee**, S.Bae, M.Lee, K.Lee, R.N.Kim, W.Park, W.Han, S. Kwon, PHLI-seq: constructing and visualizing cancer genomic maps in 3D by phenotype-based high-throughput laser-aided isolation and sequencing. *Genome biology*, 2018

PUBLICATIONS IN CONFERENCE

1. **Y. Lee**[†], H. Lee[†], K. Shin[†], J. Lee, S. Kwon, Graph representation of immune repertoire (GRIP) *In prepare for AAAI*, 2023
2. **Y. Lee**, A.C.Lee, A.Choi, K.Shin, O.Kim, Y.Jung, C.Kim, T.Ryu, S.Kwon, Phenotype based selective single cell isolation using near-infrared pulse laser for spatially resolved omics analysis, *MicroTas*, 2020
3. **Y. Lee**, A.C.Lee, A.Choi, K.Shin, O.Kim, Y.Jung, C.Kim, T.Ryu, S.Kwon, Pulsed laser based single cell isolation for spatially resolved omics analysis, *The Korean Biochip Society*, 2020
Best Research Awards Winner