**JIMIN KANG**

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**Webpage:** http://JiminKang.info **LinkedIn:** https://www.linkedin.com/in/jkkorea/

**SUMMARY**

My primary research area of interest is in the development of biomedical sensors. I received my Master of Science (M.Sc.) in Bio-Nano Lab at Korea University where I designed and fabricated detection sensors for DNA. This includes expertise in using materials (nano-materials, proteins, and DNA beacon), handling relevant instruments, and programming skills (SolidWorks, C/C++). Since then, I have worked in related industries in biology. I participated in various projects including blood analysis method for Rheumatoid Arthritis patients and developing a translator for interpreting genes and compounds. I am now pursuing a Ph.D. to further hone my expertise and knowledge and to open myself to new areas in the biomedical field.

**EDUCATION AND TRAINING**

**Internship** 07/2019 to 08/2019

**Max-Planck Institute for molecular biomedicine**, Muenster, Germany

* Learned single-cell RNA-Seq analysis pipeline (using BD Rhapsody Express / Illumina NextSeq550 system).
* Practical experience of the whole single-cell RNA sequencing process.

**Trainee** 01/2019 to 06/2019

**Inter-university Semiconductor Research Center (ISRC)**, Seoul, Korea

* Practical experience of the whole MEMS fabrication process.

**Master of Science**: Mechanical engineering 02/2018

**Korea University**, Seoul, Korea

M.Sc. in Mechanical Engineering. Thesis under the supervision of Prof. Dr. SungSoo Na

* Dissertation: " Single-nucleotide polymorphism and low signal-to-noise ratio DNA detection using resonance frequency and voltammetry."

**Bachelor of science**: mechatronics engineering 08/2015

**Tech University of Korea**, Gyeonggi-do, Korea

* Graduation project: Moving Guide Apparatus (An apparatus that recognizes the user and detects obstacles using NI LabView vision and SolidWorks).

**RESEARCH EXPERIENCE**

**Broad Institute Of MIT & Harvard**

Cambridge, Massachusetts

**Research Scholar** 03/2020 to Present

- Devised a Biomedical Data Translator (<http://ncats.nih.gov/translator>) that interprets genes and compounds. Especially with the RxNorm database. Participated in NIH Translator meeting.

- Developed a web-basedGene and Compound search tool that allows researchers to quickly retrieve information of genes or compounds and match it to their research. Manuscript pending.

**Rokit Genomics**

Seoul, Korea

**Project Manager** 07/2019 to 03/2020

- Set up a single-cell RNA sequencing pipeline identical to that of the Max-Planck Institute for molecular biomedicine.

- Performed single-cell RNA sequencing and analysis of Rheumatoid Arthritis patients PBMC in collaboration with Yeouido St.Mary hospital and Max-Planck Institute.

- Developed a single cell sorting kit for single-cell RNA sequencing, based on MEMS and fluid mechanics.

**Korea University**

Seoul, Korea

**Research Assistant** 03/2016 to 02/2018

- KRAS DNA detection sensor design, and fabrication. Using microcantilever and MutS enzyme. Issued a paper and patent.

- EGFR DNA detection sensor design, and fabrication. Using Cyclic Voltammetry and DNA Beacon.

**University of Southern California**

Los Angeles, California

**Intern** 08/2015 to 10/2015

- Researched about optimization of fabricating single-wall Carbon nanotube using Taguchi analysis.

- Worked on practical Carbon nanotube fabrication.

**PUBLICATIONS**

* Dančík, Vlado., Bruskiewicz, Kenneth.\*, **Kang, Jimin.\***, Muller, Sandrine., Wawer, Mathias., Bruskiewich, Richard., Byrd, William E., Flannick, Jason., and Clemons, Paul. (2020). "MolePro: a programmatic interface for systems chemical biology that allows fast and flexible development for workflow-based user interfaces." *Pending.*
* Park, Chanho\*., **Kang, Jimin\*.**, Baek, Inchul., You, Juneseok., Jang, Kuewhan., & Na, Sungsoo. (2019). "Highly sensitive and selective detection of single-nucleotide polymorphisms using gold nanoparticle MutS enzymes and a microcantilever resonator." *Talanta*, 205, 120154. (Featured Article)
* Kang, DaeJin., Yang, Sisi., Wang, Bo., Chen, Jihan., Dhall, Rohan., Hou, Bingya., **Kang, Jimin.** & Cronin, Stephen. B. (2017). "Taguchi analysis of parameters for small-diameter single wall carbon nanotube growth." *AIP* *Advances*, 7(9), 095301.
* **Kang, Jimin.**, Jang, Kuewhan., & Na, Sungsoo. (2019). "Extremely Low Signal-to-Noise Ratio EGFR DNA Detection Using Voltammetry." *Under* *review*.

**PATENTS**

* **Kang, Jimin.**, Jang, Kuewhan., Na, Sungsoo. "Sensor for detection of gene mutation using resonance frequency shift" Korea 10-1991593 Issued June 14, 2019
* Kang, DaeJin., Jeon, Kyungmin., Lee, Eugene., **Kang, Jimin.**, Kim, Eunjeong., "WALKING GUIDE APPARATUS", Korea 10-20140192684 Issued June 23, 2016
* **Kang, Jimin.**, "Sending and Receiving Method for Sound and Data of Television Using Remote Control" Korea 10-08561140000, Issued August 27, 2008
* **Kang, Jimin.,** Na, Sungsoo. "Extremely low signal-to-noise ratio EGFR DNA detection method and apparatus" Application Number Korea 10-2017-0182420

**HONORS & AWARDS**

* Korean Government Funding (February 2020, $38,952)
* Korea University Graduate Research Scholarship (March, 2017; $9000)
* Korea Polytechnic University Dean's award (November, 2015)
* Garrik Ahn Award (SHARP Diagnostics; Hopstart) (Apr, 2022)

**SELECTED POSTER PRESENTATIONS & ABSTRACTS**

* **Jimin Kang,** Chanho Park, Juneseok You, Kuewhan Jang\* and Sungsoo Na\*, "High Sensitive KRAS Detection Using Single Base Mutation Detection Protein" The Korean Society for Noise and Vibration Engineering (KSNVE), October. 2017
* Chanho Park, **Jimin Kang,** Sungsoo Na\*, "KRAS single point mutation DNA detection using specific binding of MutS to the mismatched DNA and AuNPs" The Korean Society of Mechanical Engineers (KSME), April 2018.

**SKILLS**

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| --- | --- |
| * Biosensor fabrication. (e.g., RNA detection sensor, Nanomaterial, Nanosensor) * Able to manage Single-cell Sequencing instruments (10x chromium, BD Rhapsody, Illumina NextSeq) * Programming skills for designing sensors (SolidWorks, Catia), processing (Python, R, C++) | * Statistical analysis for the Bioinformatics   (Seurat, Monocle3)   * DNA manipulation using molecular beacon   (e.g. DNA hairpin, binding force manipulation) |

**TEACHING EXPERIENCE**

**KOREA University**

Seoul, Korea

**Teaching Assistant** 03/2017 to 12/2017

Taught third-year university-level physics at Korea University. Held small-group tutorials to explain vibration, resonance frequency, microscopy, stress and strain, and computer-aided design. Helped students design experiments to demonstrate these concepts. Graded scientific papers and presentations according to University standards and was nominated for a teaching award.

**KOREA Polytechnic University**

Gyeonggi-do, Korea

**Teaching Assistant** 03/2015 to 06/2015

Taught a SolidWorks course at Korea Polytechnic University to juniors. Helped students design a project to demonstrate their ideas. Graded scientific papers and presentations according to University standards.

**CODEWings.com**

Seoul, Korea

**Programming Mentor (Python, Java, C)** 06/2017 to 06/2019

Taught coding to middle school students.

**Food for the Hungry, Inc.**

Seoul, Korea

**Tutoring (Mathematics)** 03/2009 to 12/2009

Tutoring for children who could not afford private education.

**SCIENTIFIC MEETINGS**

* Biomedical Data Translator Meeting (<http://ncats.nih.gov/translator>). Virtual, September, 2020
* Engineering Research Center for DNA Sensor Meeting. Jeju, Korea, July, 2017
* Engineering Research Center for DNA Sensor Meeting. Incheon, Korea, July, 2016

**TEST SCORE**

* **IELTS** **7.0**  / Listening 7.5 / Reading 6.5 / Writing 6.0 / Speaking 7.5 (9th, September, 2020)
* **TOEFL** **101** / Listening 28  / Reading 27 / Writing 24 / Speaking 22 (25th, August, 2020)

**OTHER EXPERIENCE**

**2018 PYEONGCHANG OLYMPIC & PARALYMPIC ORGANIZING COMMITTEE**

Pyeongchang, Korea

**Translator** 01/2018 to 03/2018

Working at the Arriving and Departure department as a translator during the Winter Olympic and Paralympic games.

**WEBS DATA SYSTEM**

Seoul, Korea

**SolidWorks Modeling Internship** 12/2013 to 02/2014

Working and learning about CAD modeling, structural designing with SolidWorks.

**REPUBLIC OF KOREA AIR FORCE**

Korea

**Sergeant** 05/2011 to 05/2013

Compulsory military service

**REFERENCES**

* Dr. Paul Clemons, Broad Institute (Cambridge, MA)
  + E-mail: pclemons@broadinstitute.org
* Prof. Dr. SungSoo Na, Korea University (Seoul, Korea)
  + E-mail: nass@korea.ac.kr
* Prof. Dr. Daejin Kang, Korea Polytechnic University (Gyeonggi-do, Korea)
  + E-mail: djkang@kpu.ac.kr

