

ERICK CHICA-CARRILLO

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»»» EDUCATION

KOREA ADVANCED INSTITUTE OF SCIENCE & TECHNOLOGY - (KAIST)

Feb 2022 - Aug 2025

Master of Science (MS) in Electrical Engineering

📍 Daejeon, South Korea

- » **Research Area:** Bioelectronic Systems, Flexible Electronics, Organ-on-a-Chip, and Organoids
- » **Thesis:** Development of a Three Dimensional Multiwell Millifluidic Platform Integrated with Stretchable Microelectrode Arrays for Organoid Evaluation in Real Time
- » **Funding:** KAIST Scholarship for International Students

KOREA UNIVERSITY

Feb 2018 - Feb 2022

Bachelor of Engineering (BEng) in Electrical Engineering

📍 Seoul, South Korea

- » **Graduation Project:** Design of a Fault Detecting Device for Vibrating Machines
- » **Funding:** Global Korea Scholarship (GKS)

»»» RESEARCH EXPERIENCE

KAIST - SCHOOL OF ELECTRICAL ENGINEERING

Feb 2022 - Aug 2025

Graduate Researcher

📍 Daejeon, South Korea

- » Designed, simulated, fabricated, optimized, and characterized flexible polymer-based microfluidic chips, such as polydimethylsiloxane (PDMS) and SU-8 to study organoid-to-media interactions.
- » Fabricated, characterized, and analyzed data from microelectro mechanical systems (MEMS)-based electrophysiological devices, such as multi-electrode arrays (MEAs), ensuring reliable and long-term performance on electrogenic organoids and rough surfaces.
- » Researched, studied, fabricated, and experimented on novel and emerging flexible materials for bio electronic applications, such as wearable sensors, organ-on-a-chip, and soft robotics.

KOREA UNIVERSITY - DEPARTMENT OF ELECTRICAL ENGINEERING

Jan 2021 - Jul 2021

Undergraduate Intern

📍 Seoul, South Korea

- » Developed a monitoring system device to detect vibrating machine malfunctions based on waveforms recovered from accelerometers.
- » Simulated and tested different mixed-signal circuits to process acquired signals in order to detect anomalies.

KOREA UNIVERSITY - DEPARTMENT OF ENVIRONMENTAL SCIENCE

Jun 2019 - Jun 2020

Undergraduate Intern

📍 Seoul, South Korea

- » Performed chemical and biological experiments to contribute to research projects aimed at studying nitrogen concentrations in various types of soil under vacuum conditions.

»»» PUBLICATIONS

- Y. Kim[†], E. Chica[†], and H. J. Lee, "Microfabricated sensors for non-invasive, real-time monitoring of organoids," *Micro and Nano Systems Letters*, vol. 12, no. 1, p. 26, 2024.
- E. Chica, H. Jang, Y. Kim, Y. Kwon, Y. Lee, M. Lee, and H. J. Lee, "Millifluidic TriMEA organoid platform with stretchable microelectrode arrays for multi organoid evaluation," *Manuscript in Preparation*, 2025.

»»» TEACHING EXPERIENCE

KAIST - SCHOOL OF DIGITAL HUMANITIES AND SOCIAL SCIENCES

Feb 2024 - Aug 2025

Teaching Assistant: *Scientific Writing*

📍 Daejeon, South Korea

- › Reviewed, graded, and provided detailed feedback on academic writing submitted by students prior to journal submission for improvement.
- › Collaborated with the professor in charge to plan course activities, organization, assessments, and evaluation criteria.
- › Monitored and managed online course content, discussion boards, and gradebook on the university's learning management platform.

KAIST - ENGLISH AS A FOREIGN LANGUAGE PROGRAM

Aug 2024 - Jun 2025

Academic Tutor

📍 Daejeon, South Korea

- › Provided one-to-one meetings to university students to supplement their classes and work on improving their English writing and speaking skills.

KAIST - SCHOOL OF ELECTRICAL ENGINEERING

Aug 2024 - Dec 2024

Teaching Assistant: *Nanobioelectronics*

📍 Daejeon, South Korea

- › Evaluated homework, presentations, quizzes, examinations, and projects in accordance with grading criteria and guidelines.
- › Provided supplementary material in the form of academic papers on the topics covered in class, such as potentiometric/amperometric sensors, diffusion limits, and microfluidics

KOREA UNIVERSITY - CENTER FOR TEACHING AND LEARNING

Mar 2020 - Jun 2020

Academic Tutor

📍 Seoul, South Korea

- › Tutored the *Calculus with Lab I* course to a group of twelve undergraduate students at Korea University, providing additional support outside of formal teaching assistant roles.
- › Planned tutoring sessions in advance after discussion with the professor in charge of the lecture.

»»» SKILLS

Computational Skills

- › **Simulation & Modeling:** COMSOL Multiphysics, MATLAB, PSpice
- › **Programming:** Python (NumPy, Pandas, Matplotlib, PyTorch, Scikit-learn), R, LaTeX, Arduino
- › **Design & Layout:** L-Edit (Layout Editor for MEMS Design), AutoCAD, KiCad EDA
- › **Graphic Design & Visualization:** Adobe Illustrator, BioRender, Blender, 3DS Max

Laboratory Skills

- › **MEMS Fabrication:**
 - › Photolithography: Mask Aligners, Spin Coaters, UV Exposure Systems, Developing Techniques
 - › Reactive Ion Etching (RIE), Electron Beam/Thermal Evaporators, Stylus Profilers
- › **Imaging Techniques:** Bright-field Microscopy, Confocal Microscopy, Image Analysis Software (Fiji)
- › **Electrochemical Tools:** Potentiostat Systems (Cyclic Voltammetry, Electrochemical Impedance)
- › **Biological Techniques:** Organoid Culture, Hydrogel Embedding, Immunostaining, Sterile Techniques

Language Skills

- › **Spanish:** Native Proficiency
- › **English:** Full Professional Proficiency (TOEFL iBT: 113)
- › **Korean:** Intermediate Proficiency (TOPIK: Level 3)