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 AND MANUSCRIPTS

Chica, **E.**, Jang, H., Kwon, Y., Kim, Y., Lee, Y., Lee, M. & Lee, H. J. (2025), *Millifluidic TriMEA organoid platform with stretchable microelectrode arrays for multi organoid evaluation*, In Preparation.

Kim, Y., **Chica-Carrillo**, **E. C.** & Lee, H. J. (2024), *Microfabricated sensors for non-invasive, real-time monitoring of organoids*, Micro and Nano Syst Lett, vol. 12, no. 1, p. 26. doi: 10.1186/s40486-024-00216-y.

POSTER PRESENTATIONS

Chica, **E.**, Jang, H., Kwon, Y., Kim, Y., Lee, Y., Lee, M. & Lee, H. J. *Millifluidic triMEA organoid platform with stretchable microelectrode arrays for multi organoid evaluation*. Poster presentation at the Society of Micro and Nano Systems 2025 MNS Fall Conference, Yeosu, South Korea, Nov. 19, 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 Miscroscopy, 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)