JAIRO NARRO

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EDUCATION

University of Engineering and Technology (UTEC), Lima, Peru **2018 - 2023 (Expected)**
BSc in Bioengineering.

RESEARCH EXPERIENCE

Purdue University, Birck Nanotechnology Center **January 2022 - April 2022**
Research Assistant, Electron Microscopy Facility (Remote)

Project: Microfabrication by bitmap milling with a Focused Ion Beam (FIB) - Scanning Electron Microscope (SEM) dual beam system.

- Conducted state-of-the-art research about the formation mechanism of profile errors in 3D microstructures and optimization methods to improve fabrication accuracy in FIB bitmap milling.
- Developed a Graphical User Interface in Python to automate the generation of bitmap files and the micro- and nanopatterning process.
- Generated bitmaps for the fabrication of micro- and nanoholes, arrays of quadratic and triangular structures, and 3D surfaces such as quadratic and v-groove structures.

Case Western Reserve University and Cleveland Clinic **June 2021 - August 2021**
Biomedical Engineering Intern (Remote)

- Worked with an international team towards the design of an innovative assistive technology that allows people with disabilities to use a computer properly.
- Designed with Autodesk Inventor a 3D CAD model of a joystick-operated computer mouse for people with bilateral upper extremity amputations.

Technological University of Peru (UTP), IEEE EMBS **March 2021 - July 2021**
Biomedical Engineering Research Program (Remote)

- Identified 3 voice parameters as potential biomarkers for early diagnostics and telemonitoring of Parkinson's disease patients using machine learning.
- Analyzed and visualized data using statistical techniques.
- Applied and tested classification models to identify relevant voice parameters with the best model accuracy score of 97.8%

ADDITIONAL EXPERIENCE

University of Engineering and Technology, Department of Bioengineering
Laboratory Assistant, Professor Alberto Donayre

Project: Genetic editing in Plants **September 2022 – Present**

- Assisting in experiments to test a CRISPR/Cas9 system in Nicotiana spp. for genetic editing validation, including plant tissue culture, restriction enzyme digestion, electrophoresis, and cloning techniques.

Project: Development of a lab course in synthetic biology **July 2022 – Present**

- Assisting in the design of a curricular structure for a synthetic biology laboratory course for undergraduate bioengineering students.
- Searching and cataloging biotech kits for recombinant DNA technology and molecular biology techniques.

CONFERENCE PUBLICATIONS

- Narro, J., & Diaz, R. (2022). A New Tool for Automation of Focused Ion Beam Bitmap Milling of Two-and Three-Dimensional Micro and Nanostructures. *Microscopy and Microanalysis, 28*(S1), 88-90. doi:10.1017/S143192762200126X **(Abstract Publication)**

PRESENTATIONS

- Larriega, S., Loayza G., & Narro, J. *CRISPR-based Microfluidic Biosensor for the Diagnosis of Infectious Diseases in Remote Areas of Peru*, Cleveland Clinic – UTEC Summit 2022, October 2022. (Poster)
- Narro, J. *Automation of Bitmap Files Generation for the Fabrication of Micro- and Nanostructures with a Focused Ion Beam*, REPU Seminar 2022, April 2022.
- Narro, J., & Garcia, V. *Selection of Voice Parameters for the Diagnosis and Monitoring of Patients with Parkinson's Disease*, Biomedical Engineering Research Program, IEEE EMBS UTP, July 2021.

AWARDS AND RECOGNITIONS

- **3rd place in Cleveland Clinic – UTEC Challenge 2022.** Poster competition on low-cost technologies in the post-pandemic era.
- **PRONABEC Continuidad de Estudios Scholarship 2022.** National need-based scholarship for higher education students with strong academic performance. From May 2022 to February 2023.
- **nanoREPU program 2022.** Selected for a three-month remote research internship at Purdue University, USA, Spring 2022.

TEACHING EXPERIENCE

Edukay, Volunteer Instructor **February 2021**

- Taught over 200 elementary and middle school teachers how to implement digital tools in their classes, such as Google Classroom, Zoom, and Kahoot, to improve online teaching.

Invent UTEC, CAD Software Teacher **July 2020 - August 2020**

- Taught over 10 high school students 3D modeling and design with Onshape (CAD software).

EXTRA-CURRICULAR ACTIVITIES

AIChE - American Institute of Chemical Engineers, K-12 Program **May 2022 - June 2022**

- Organized science and engineering workshops for elementary and high school students.

REPU - Research Experience for Peruvian Undergraduates, Journal Club **January 2022 - March 2022**

- Presented a review of two research articles on microfabrication with a Focused Ion Beam.
- Discussed scientific research articles on nanotechnology and physics topics.

REPU - Research Experience for Peruvian Undergraduates, Volunteer **June 2022 - July 2022**

- Gave informative talks about the REPU internships to motivate undergraduate students and recent graduates to apply to the program.
- Organized the annual REPU meeting to share experiences between members and discuss new ways to improve the program.

SBE - Society for Biological Engineering, Project Committee **August 2020 - August 2021**

- Planned and developed projects and activities to promote biotechnology and bioprocess topics.
- Organized workshops and participated as a volunteer and speaker.
- Served as a volunteer in the organization of the International Forum on Applied Biotechnology and Bioreactors.

EXTRA-CURRICULAR COURSES

- "Nanotechnology: A Maker's Course", Research Triangle Nanotechnology Network, through Coursera.
- "Introduction to Data, Signal, and Image Analysis with MATLAB", Vanderbilt University, through Coursera.

- “Focused Ion Beam”, Microscopy Australia, through myscope.training
- “Scanning Electron Microscopy”, Microscopy Australia, through myscope.training

SKILLS

- **Laboratory:** Familiar with bacterial transformation, plant tissue culture, and cloning techniques.
- **Programming:** Python, MATLAB, R
- **Bioinformatics:** Familiar with Bioconductor Packages, MEGA X, BioEdit, PAUP, MrBayes.
- **Software:** Autodesk Inventor, COMSOL Multiphysics, Onshape, Multisim Live, LabVIEW, SnapGene.