

# Max (Joji) Nishibuchi

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## OBJECTIVE

Current graduate student in Materials Engineering looking for part time work in data science and software engineering. A majority of my work in the latter half of my undergraduate degree focused on software design and data science, and I am seeking to broaden my experiences in these fields as well as contribute my existing experience in machine learning and data science to help new teams in elucidating conclusions from their datasets. Will be graduating next spring and will be open to full time employment opportunities immediately after graduation. Native Japanese/English fluency.

## EDUCATION

**Purdue University**, West Lafayette, IN

Aug 2018 – 2022

BSc. Materials Science and Engineering

**Purdue University**, West Lafayette, IN – Graduate Research Assistant

MSc. Materials Engineering

- Working under the supervision of Dr. Alejandro Strachan in collaboration with Lockheed Martin and the University of Central Florida in investigations of the interface of ZnS-CLS nanocomposites utilizing high performance computing (HPC) methods. Several papers on findings are in the process of publication. Coursework is heavily focused on the acquisition of skills for use in machine learning, such as artificial intelligence courses and data mining. Will graduate in Spring 2023 and will immediately be available for full time employment afterwards.

## SKILLS

**Programming Languages:** Bash (2 years), Python (5 years), HTML/CSS/JS (7 years), C++ (2 years), MATLAB (2 years)

**Data Science:** Neural Networks (PyTorch, TensorFlow), Machine Learning (Random Forest, Gaussian Process Regression), Data Visualization (t-SNE, UMAP, Pearson Correlation Matrices)

**Other Skills:** Ab initio atomistic modeling in VASP, failure analysis, thin film deposition, Microsoft Office suite, technical writing, process analysis, process auditing & improvement, hands on SEM/XRD/optical microscopy experience, Fusion 360 3D modeling, extensive mechanical testing experience.

## STUDENT INVOLVEMENT

**Modeling Property Behavior of Nickel Superalloy via ML Methods**

Fall 2021

- Created a custom implementation of the SISSO algorithm in Python that is capable of generating and evaluating the correlation of over 1,000,000 compound features for use in further training of machine learning models. **Currently working on developing this implementation into an open-source library.** This implementation was able to create features with Pearson Correlations > .9 while being capable of being ran on a personal laptop. Also generated multiple high accuracy machine learning models via Random Forest, Gaussian Process Regression, and neural network methods. Created reduced dimensionality visualizations of a multiple parameter dataset with methods such as UMAP, t-SNE, and Pearson Correlation Matrices

**Ab Initio Simulation of Solid-State Electrolytes**

Spring 21' to present

- Utilizing ab initio simulation methods, working to elucidate the nature of lithium occupancy in fast ion transport in the solid-state electrolyte  $\text{Li}_7\text{La}_3\text{Zr}_2\text{O}_{12}$ . Wrote scripts in Bash to automate the running and data cleaning of 400 molecular simulations, now applying machine learning and neural network methods to try and identify relations between lithium occupancy and its transport through the molecule.

Japanese Student Association

2017-Present

Purdue 3D Printing Club

2019-Present

Purdue University Materials Advantage

Fall 2020-Present

Detrash the Wabash, Volunteer

2018-2021

## WORK EXPERIENCE

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### **Parker Hannifin – Quality Engineering Intern**

Summer 2018

- Collaborated with plant manager, purchasing managers, design & quality engineers, and floor personnel in Parker Hannifin's hydraulics division to resolve quality control issues. Designed return processing system that was implemented division wide. Led process audit analysis for entire production line to determine areas for improvement in manufacturing by streamlining SQL request data to easily digestible Pareto charts to find hinderances in manufacturing. Resolved corrosion issues by recommending supplier vacuum seal metal block samples prior to shipping to prevent moisture contamination.

### **Purdue Information Technology– Technical Analyst**

Fall 2020-Present

- Lead team of developers in the creation of web-based management tools for administration of all computer labs across Purdue University's campus. Primarily focused on vanilla Javascript based development with some work in Node.js frameworks. Created multiple webpages for use in management, as well as assisted in providing data analytics via the Kaltura API to elucidate causes for delays in the provision of online course videos during the quarantine of COVID-19. These analytics helped improve course delivery to over 50,000 students across Purdue's campuses by reducing the delay between instructors uploading their videos and students being able to access them.

## HONORS AND AWARDS

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National School Marching Band Award

2017

Purdue Writing Showcase

2018

- Nominated as finalist in Purdue Writing Showcase for a composition investigating scientific and macroeconomic challenges and solutions in the recycling of polymers.