Yutaro Shimizu

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Research Experience

Santa Fe Institute | Santa Fe, New Mexico

Undergraduate Complexity Researcher, Foundations of Intelligence, June 2022 – August 2022

- Improved Genetic Algorithms' MNIST classification accuracy by 15% by designing novel evolutionary search mechanism (host-parasite coevolution, patch fragmentation and αβγ diversities); Supervisor: Melanie Mitchell
- Quantified evolution of algorithm solutions with Information Theory (relative entropy and cosine similarity)
- Presented research talk to 50 top complexity researchers and received feedback on visual communication

Shinshu University | Nagano, Japan

Research Assistant, Environmental Science Department, July 2021 – January 2022

- Developed 30-meter resolution GIS web app using Landsat images to track microclimate of volcanic forests
- Surveyed growth of 5000 trees in 5 sub-Alpine forests for biodiversity and global change studies
- Led publication by modeling statistical mechanics of tree growth with field data from 5+ sub-Alpine forests
- Sampled 1,000 wood cores from Japanese thatched house for traditional ecological knowledge studies

Newday Impact Investing| San Francisco, California

Web Analytics Intern, September 2019 – April 2020

- Designed novel customer credit scoring algorithm using large KPI database of 2000+ portfolio companies
- Renovated 10+ UI/UX wireframes of credit score application to nudge sustainable consumption of customers

Education

Minerva University| San Francisco, California

Bachelor of Science, College of Natural Sciences, May 2023

- Cumulative GPA: 3.39/4.00; Concentration: Organisms and Earth System; Acceptance rate: 1.2%
- Courses: Algorithms and Data Structures, Climate Modeling, Software Engineering, Statistics & Real Analysis
- Replicated causal inference about effect of Congolese Civil War on forest cover; Supervisor: Alexis Diamond
- Simulated 100-year impact of San Francisco's Sea Level Rise on native endangered bird's population
- Modeled nonlinear dynamics of population decay for mathematical analysis of real-world chaotic systems
- Lived and studied in 7 cities over 4 years (San Francisco, Seoul, Tokyo, London, Berlin, Buenos Aires, Taipei)

UWC ISAK Japan | Nagano, Japan

International Baccalaureate Diploma, 40/45 IB points, June 2019

- Founded 30 hectare forest conservation non-profit with state office and local residents (150+ participants)

Publication

- **Shimizu, Y.**, Tondokoro, Y., and Ida, H. Allometry of young Fagus crenata: prostrate stem reinforces belowground development. *Journal of Forest Research*, In review.

Skills and Interests

- **Technical Skills:** Python, R, JavaScript, Shell, Google Earth Engine (intermediate), C & SQL (elementary)
- **Personal Interests:** scientific illustration, drawing, filmmaking, reading, cooking, surfing, hiking, dance
- **Languages:** English and Japanese (native); Mandarin (conversational)