

Yichen Geng

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EDUCATION

Harvard University, Cambridge, MA

Ph.D., Earth and Planetary Sciences

Expected May 2026

M.S., Data Science

May 2021

Brown University, Providence, RI

B.A., Geology – Physics/Mathematics – Honors and Applied Mathematics

May 2019

RESEARCH EXPERIENCE

Dept. of Earth and Planetary Sciences, Harvard University, Cambridge, MA

Graduate Student; Advisor: Prof. Miaki Ishii

September 2021 – Present

Develop source theories of bimaterial faults and faults that rupture through discontinuities.

Analyzed body-wave propagation in a prestressed medium. Developed a novel automatic phase-picking algorithm for processing seismic array data.

Dept. of Earth and Planetary Sciences, Harvard University, Cambridge, MA

Research Assistant; Advisor: Prof. Miaki Ishii

June 2020 – August 2021

Investigated the core-mantle boundary structure using PcP waves.

Dept. of Earth, Atmospheric and Planetary Sciences, MIT, Cambridge, MA

Research Assistant; Advisor: Prof. William Frank

September 2020 – August 2021

Studied the characteristics of aftershock activity following the 2014 Mw8.1 Iquique earthquake.

Dept. of Earth, Environmental and Planetary Sciences, Brown University, Providence, RI

Research Assistant; Advisor: Prof. Karen Fischer

Summer 2017, Summer 2018 – Spring 2019

Studied the mantle anisotropy and deformation beneath the Hindu Kush-Pamir region and the U.S. using shear-wave splitting observations.

TEACHING EXPERIENCE

Freshman Seminar 23I: GeoSciFi Movies, Harvard University, Cambridge, MA

Teaching Fellow

Fall 2022 and 2024

Helped with instruction, graded weekly assignments, and held weekly office hours. Students watch natural-disaster related movies, learn the science behind the scenes, and apply math and physics concepts to develop “back-of-the-envelope” calculations that assess the realism.

E-PSCI 165/265: Introduction to Seismology, Harvard University, Cambridge, MA

Teaching Fellow

Fall 2023

Helped with instruction, graded exercises, provided feedback on final projects. Students are introduced to earthquakes and seismic waves.

MATH 1120: Partial Differential Equations, Brown University, Providence, RI

Grader

Spring 2019

Graded weekly assignments. Students are introduced to classic equations in mathematical physics.

MENTORING EXPERIENCE

Summer Program at Harvard in Earth and Environmental Research (SPHEER), Harvard University, Cambridge, MA

Peer Mentor for a cohort of 7-10 undergraduate students

Summer 2023 and 2024

Hosted weekly workshops on science skills (e.g., constructing a presentation). Provided logistic supports for the students.

EPS Short-Term Program, Dept. of Earth and Planetary Sciences, Harvard University, Cambridge, MA

Mentor

August 2023

Advised an undergraduate student on a three-week project to study the subsurface structures beneath Japan using seismic waves. Instructed the student on how to read seismic recordings, wrote a software for the student to process these recordings, and guided the student to interpret the processed data. Held weekly check-in meetings.

PUBLICATIONS (*In. Prep.)

Geng, Y., & Ishii, M. (2024). Body-wave speeds and polarizations in the presence of an initial deviatoric stress. *Geophysical Journal International*, 239(3), [1943-1952](#), [doi:10.1093/gji/ggae369](https://doi.org/10.1093/gji/ggae369)

*Geng, Y. & Ishii, M. (in prep.). A Novel Cross-Correlation-Based Automatic Phase-Picking Algorithm for Seismic Array Data and its Application to PcP Arrivals

PRESENTATIONS (*Invited)

*Geng, Y. (2024). Why Are Current Earthquake Studies on the San Andreas Fault Insufficient?, given at the Department of Earth, Environmental and Planetary Sciences at Brown University, 1 Oct.

Geng, Y. & Ishii, M. (2024). Source Parameter Determination of Bimaterial Faults through Long-Period Seismic Waves, Poster 011 presented at 2024 SCEC Annual Meeting, Palm Springs, CA, 8 – 11 Sept.

Geng, Y. & Ishii, M. (2023). Anisotropy in the Presence of an Initial Deviatoric Stress, Abstract DI42A-09 presented at 2023 AGU Fall Meeting, San Francisco, CA, 11 – 15 Dec.

Geng, Y. & Ishii, M. (2023). Heterogeneous Structures beneath Japan Illuminated by Core-Reflected Seismic Waves, Abstract DI14A-03 presented at 2023 AGU Fall Meeting, San Francisco, CA, 11 – 15 Dec.

Geng, Y. & Ishii, M. (2022). A Novel Cross-Correlation-Based Automatic Phase-Picking Algorithm for Seismic Array Data and its Application to PcP Arrivals, Abstract S43B-06 presented at 2022 AGU Fall Meeting, Chicago, IL, 12 – 16 Dec.

Geng, Y., MacDougall, J., West, J. M., & Fischer, K. M. (2019). Seismic Anisotropy and Mantle Deformation beneath the Hindu Kush-Pamir Region, Abstract DI21B-0029 presented at 2019 AGU Fall Meeting, San Francisco, CA, 9 – 13 Dec.

AWARDS

American Geophysical Union Outstanding Student Presentation Award	2022
Brown University Undergraduate Teaching and Research Award	2017