Doan Dai Nguyen

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Education

- **École Normale Supérieure - Paris Sciences & Lettres** — Paris, France
  Étudiant normalien, Computer Science — *Sep 2023 - Jun 2026 (Expected)*
  - **Competed at ICPC Southwestern European regional (SWERC) 2023 (17^{th}/108), 2024 (TBD).**
- **École Polytechnique** — Palaiseau, France
  Bachelor of Science in Mathematics and Computer Science, minor in Biology. — *Sep 2020 - Jun 2023*
  - **Admitted with honour; graduated summa cum laude. CGPA: 4.23/4.00; Math GPA: 4.30/4.00**

Experience

- **Hamilton Institute, Maynooth University** — Maynooth, Ireland
  Research assistant — *June 2024 - Aug 2024*
  - Introduced two Ising-like models for nucleic acid folding and showed computational complexity of related problems.
- **Laboratory of Informatics of École Polytechnique** — Palaiseau, France
  Research assistant, Bachelor Thesis — *Jan 2023 - Mar 2023*
  - Derived new algorithms to determine if and how robust a thermodynamic model can predict an RNA secondary structure. Showed *for the first time* that Relative Position problem is solvable in weak polynomial time. arXiv:2304.14962
- **Laboratory of Optics and Bioscience** — Palaiseau, France
  Research assistant — *Sep 2022 - Dec 2022*
  - Set up and adapted AlphaFold-Multimer model to study proteins involved in archaea's DNA repairment.
- **Laboratory of Optics and Bioscience** — Palaiseau, France
  Research assistant — *Jun 2021 - Oct 2021*
  - Created and implemented algorithms to optimize force constants that represent dihedral angles in chemical force field.

Activities and Awards

- **International Collegiate Programming Contest (ICPC)** — Remote
  Jury — *2022 - Present*
  - **regional Northwestern Europe (NWERC) 2023, 2024**:
  - **regional South-Pacific 2024**:
  - **regional Vietnam Northern Provincial 2023**: Author of problem F - Bureaucracy, 1 of 2 problems unsolved in contest.
  - **regional Western Asia 2021**: Author of Problem B - Tree regression, the hardest problem in Asia Preliminary round (solved by 2 in 2260 teams) and Problem I - Bitcoin, the third hardest problem in Amritapuri regional round.
- **30^{th} International Mathematics Competition for University Students** — *Aug 2023*
  Second prize.
- **C1 Terminal - Summer Invitational 2022** — *Aug 2022*
- **Meta Hacker Cup (formerly Facebook Hacker Cup)** — *2019, 2022*
  Advanced to round 2, and ranked 528^{th}/1028 (2019), 1653^{rd}/5047 (2022).
- **Google Hash Code** — *2020, 2021*
  Google Hash Code is a 4-hour online programming contest for teams of two to four students, focused on one complex optimization problem. Ranked 1120^{th}/9004 (2021), 2180^{th}/10274 (2020).

Selected projects

- **Transcriber**
  Team leader, Model architect — *Apr 2022 - May 2022*
  Gathered primary data set, built, and trained various machine learning models to predict the language (with consistent accuracy up to 96%) and generate text from transliterated text of 15 languages.
- **LogistiX**
  Algorithm advisor, Lead software tester — *Oct 2021 - Jan 2022*
  Took charge of creating and maintaining tests for core library concerning approximate solutions to variants of Travelling Salesman Problem, such as Christofides algorithm. Advised on algorithm choices and implementation details for robustness and speed. Deployed and maintained CI/CD pipelines.

Skills

- **Languages**: English (C2), French (C1), Vietnamese (Native), German (A2), Italian (A1)
- **Programming languages**: C, C++, Python, JavaScript, Haskell, OCaml
- **Tools**: Git, Latex, HTML, Google Test, CMake, GitHub Actions, Keras, Tensorflow, MongoDB, NeDB, Node.js, Express.js