

Information for Potential Students

November 03, 2023

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A Brief Introduction

A Short CV



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Publishing in TCS

Things You May (Not)
Already Know

David Eppstein's Two
Models of Algorithms
Research

Some Recommended
Materials

Discrete Math, Graph
Theory

Algorithms, Computational
Complexity

Writing

Advice/Inspiration

Getting Scientific
Papers/Books/etc.

- **Name (in Vietnamese):** Hoàng Anh Đức
- **Name (in publications):** Duc A. Hoang
- **Current Position:** Lecturer at VNU-HUS, Hanoi, Vietnam (Feb. 2023 - present)
- **Research Interests:** Graph Algorithms, Combinatorial Reconfiguration
- **Education:**
 - **B.Math** degree from VNU-HUS, Hanoi, Vietnam (2008–2013)
 - **M.S.** and **Ph.D.** degrees (Information Science) from JAIST, Ishikawa, Japan (2013–2015 and 2015–2018 respectively)
- **Homepage:** <https://hoanganhduc.github.io/>
(contains everything about my research and teaching)

Note

This document is intended for those considering working with me. Some information here may be useful for students in general

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If you want to work with me on some research problems:

- Please *skim through my recent publications, my list of open problems, and my list of participated events* to have some ideas of what I have been working on recently
 - I am happy to work on problems related to graph theory. *If you have some graph problems in mind that you are interested in and want to solve, I am happy to discuss with you to see if we can further collaborate*
- Please *read this document* to have some ideas (of what I have learned and collected so far) about doing research in TCS
- Please contact me by *sending an email* to my current email address
 - If we have not yet known each other, please *attach to your email a copy of your academic transcript* (an unofficial copy is fine) and *your CV* (both in **PDF format**, either in **English or Vietnamese**)
- I expect you to *at least* have *some basic knowledge on discrete mathematics and graph theory* (which can be obtained by taking an undergraduate-level course related to these subjects)
 - Please take a look at *some recommended materials in this document*. Vietnamese students can also look at some of my teaching materials at <https://hoanganhduc.github.io/teaching/>
 - Some other resources I collected are available at <https://hoanganhduc.github.io/misc/>

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- **(Most Important Point)** (Collaborate,) work hard, and achieve your results
- **(Optional)** Maintain an e-print version on arXiv (<https://arxiv.org/>)
- **(Optional)** Announce your results in some seminars, workshops, or non-refereed conferences
- **(Recommended)** Submit your results to a refereed conference
 - Some conferences are highly selective, for example, STOC, FOCS, SODA, and so on
 - Quick notification (accept/reject) within around three to six months
 - Usually having just one round of review. Reviewers have no idea whether their comments have been addressed by the authors. (Some conferences have "rebuttal phase")
 - Reviewers are primarily focused on whether the work is important and superficially appears correct
- **(Recommended)** Submit your results to a refereed journal
 - It is common to expand your conference's paper to a journal version. (Yes! You can publish both conference and journal versions of the same results)
 - Slow notification (accept/reject) within six months to a year
 - Your results will usually be reviewed thoroughly by 2-3 reviewers. Usually having more than one round of review
 - The journal version of your paper is the final version and can be trusted. (In several cases, flaws exist even in the journal version)

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- Traditionally, in most areas of mathematics and theoretical computer science, **authors are listed in alphabetical order by last name**
- Academic Profiles: [Google Scholar](#), [ORCID](#)
- Mailing Lists: [DMANET](#), [THEORYNT](#)
- Journal Ranking:
 - [Scimago Journal & Country Rank](#)
 - [Scopus Indexed Journals](#)
 - [WoS \(Web of Science\) Indexed Journals](#)
- Conference Ranking:
 - [CORE Rankings Portal](#)
 - [Conference Ranks](#)
- [List of TCS conferences and workshops @ StackExchange](#)
- [Links to Combinatorial Conferences](#) (maintained by [Douglas B. West](#))

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- Conferences in Theoretical Computer Science, maintained by Miki (Nicolas) Hermann
- Some conferences:
 - **(Top-tier)** STOC, FOCS, SODA
 - STACS, SoCG, ICALP, WG, ISAAC, ESA, MFCS, COCOON, FSTTCS, FCT, GD, CanaDAM
 - SWAT, WADS, IWOCA, IPEC, EUROCOMB, FUN, CCCG, EuroCG, TAMC, SOFSEM, WAOA, COCOA, LATIN, LAGOS
 - CIAC, WALCOM, CALDAM
 - JCDCG³, SEICCGTC, SOSA, HALG, BCC, WAAC, DMD
- The Elsevier boycott
- Uploading a paper to arXiv.org
- Online Collaboration
 - Online \LaTeX editor: [Overleaf](#)
 - Workspace: [Slack](#), [Zulip](#) (support \LaTeX), [Discord](#), [Google](#), [Zalo](#) (Vietnamese)
 - Video Conference: [Google Meet](#), [Zoom](#), [Jitsi Meet](#)

David Eppstein's Two Models of Algorithms Research



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Two Models of Algorithms Research

- I. Read lots of theory papers
- II. Choose a problem with lots of previous work (evidence it's interesting)
- III. (optional) Add extra complications to the problem so you can convince people your results are more difficult than previous work
- III. Find an algorithm that's better than all the previous results
- IV. Write it up and publish it in theory conferences and journals

- I. Learn about areas outside of theoretical CS
- II. Choose a problem in one of those application areas where faster or more accurate solutions can make a practical difference
- III. Abstract essential features to get new clean theoretical problem
- IV. Find an algorithm that's better than all the previous results
- V. Write it up and publish it in theory conferences and journals
- VI. Implement and communicate your results with the community your problem came from, discover related problems, repeat

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Discrete Math, Graph Theory



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- [Discrete Mathematics and Its Applications](#), 8th edition, by Kenneth H. Rosen
- [Building Blocks for Theoretical Computer Science](#), by Margaret M. Fleck
- [Lectures on Discrete Mathematics](#) given by [Shai Simonson](#) at ArsDigita University in 2000
- [Connecting Discrete Mathematics and Computer Science](#), by [David Liben-Nowell](#). A preprint version of the book is [available](#)
- [Graph Theory](#), by [Reinhard Diestel](#) (GTM 173, 5th edition, Springer, 2016). The main text of the book can be [freely viewed online](#)
- [Introduction to Graph Theory](#), by [Douglas B. West](#) (2nd edition, Prentice Hall, 2001)

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- **Computers and Intractability: A Guide to the Theory of NP-Completeness**, by **Michael Garey** and **David S. Johnson** – One of the most influential books on the NP-complete theory, which is usually known as “the Garey&Johnson book”
- **MIT 18.404J, Fall 2020, Theory of Computation**, by **Michael Sipser**. (See [this page](#) for the PowerPoint slides.)
- **Algorithms**, by **Jeff Erickson**
- **Computational Complexity: A Modern Approach**, by **Sanjeev Arora** and **Boaz Barak**. A draft of the book is available
- **Parameterized Algorithms** by **Marek Cygan**, **Fedor V. Fomin**, **Łukasz Kowalik**, **Daniel Lokshtanov**, **Dániel Marx**, **Marcin Pilipczuk**, **Michał Pilipczuk**, and **Saket Saurabh**

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- Paul R. Halmos's advice on [How to write Mathematics](#).
Download a PDF copy [here](#)
- [Scientific Paper Writing: A Survival Guide](#), by [Bodil Holst](#),
illustrated by Jorge Cham of [PhD Comics](#)

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- [Advice for solving graph theory problems](#) by Matt DeVos
- Douglas B. West's [Advice for students in Math 412](#)
- [List of proof techniques you should **not** use](#), by Dana Angluin (page 16)
- Gary MacGillivray's [Math Study Tips](#)
- Fan Chung Graham's [A few words on research for graduate students](#)
- Terrence Tao's [career advice](#)
- Mihir Bellare's [The Ph.D Experience](#)
- Ravi Vakil's advice [For potential Ph.D. students](#)
- Adrian Bondy's [Beautiful conjectures in graph theory](#)
- [A Student's Guide to the Study, Practice, and Tools of Modern Mathematics](#), by Donald Bindner and Martin Erickson

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- **(For Vietnamese)** The [Online Portal](#) maintained by Vietnamese [National Agency for Science and Technology Information](#)
- If you cannot get a paper, **get in touch with the (corresponding) author(s) to ask for a copy before trying the following resources**
 - [Mutual Aid-Science Community](#) – you may get published papers by asking people in the community for help
 - [Sci-Hub](#)
 - [Z-Library](#)
 - Desktop App: [Windows](#), [MacOS](#), [Linux \(DEB\)](#)
 - Library Genesis: [here](#) or [here](#)
 - [PDFDrive](#)

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