

Department of Mathematics  
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## NGUYEN DUY CUONG

### Education

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- 2018 - 2021 PhD - Mathematical Sciences, [Federation University](#), Australia  
Thesis title: [TRANSVERSALITY, REGULARITY AND ERROR BOUNDS IN  
VARIATIONAL ANALYSIS AND OPTIMISATION](#) (Examiner A, Examiner B)  
Principal supervisor: Prof. [Alexander Kruger](#)  
Associate supervisor: Prof. [David Yost](#)
- 2013 - 2015 Master of Mathematical Analysis, [Can Tho University](#), Vietnam  
CGPA : [3.77/4.0](#)  
Thesis title: [CODERIVATIVES, EXTREMAL PRINCIPLES AND APPLICATIONS](#)  
Supervisor: Dr [Dinh Ngoc Quy](#)
- 2009 - 2012 Bachelor of Education in Mathematics, [Can Tho University](#), Vietnam  
CGPA: [3.85/4.0](#)  
Thesis title: [TOPOLOGICAL VECTOR SPACES](#)  
Supervisor: M.Sc [Le Hong Duc](#)

### Appointments

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- Oct. 2012 - now Lecturer, [Can Tho University](#)
- 2022 - now International Cooperation Assistant, [College of Natural Sciences, Can Tho University](#)
- 2022 - 2023 Postdoctoral Fellowship (STS.2022.40), [Vingroup Innovation Foundation \(VinIF\)](#)
- 2023 - 2024 Postdoctoral Fellowship (STS.2023.54), [Vingroup Innovation Foundation \(VinIF\)](#)

### Awards

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- 2024 [Excellent performance for two consecutive years](#), Vietnam Ministry of Education and Training
- 2023 [Domestic Postdoctoral Fellowship](#), Vingroup Innovation Foundation & Institute of Big Data
- 2022 [Domestic Postdoctoral Fellowship](#), Vingroup Innovation Foundation & Institute of Big Data
- 2021 [Lift-off Fellowship](#), Australian Mathematical Society
- 2021 [Excellent Achievement of Graduation](#), Doctor of Mathematical Sciences
- 2020 [Editors' Choice](#), Vietnam Journal of Mathematics
- 2018 [Australian Government Research Training Program Fee Off-Set Scholarship](#),  
[Centre for Informatics and Applied Optimization \(CIAO\) PhD Research Scholarship](#)
- 2015 [Excellent Achievement of Graduation](#), Master of Mathematical Analysis
- 2012 [Excellent Achievement of Graduation](#), Bachelor of Education in Mathematics
- 2012 [Third](#) (Analysis) and [Second](#) (Algebra) Prizes, Vietnam Student Olympiad
- 2011 [Third](#) (Analysis) and [First](#) (Algebra) Prizes, Vietnam Student Olympiad
- 2010 [Second](#) (Analysis) and [Third](#) (Algebra) Prizes, Vietnam Student Olympiad
- 2009 [Third](#) Prize (Analysis), Vietnam Student Olympiad

### Research interests

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- [Variational Analysis](#)
- [Optimisation](#)
- [Calculus of Variations](#)
- [Optimal Control](#)

## Selected publications

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1. **Cuong N.D.:** PRIMAL AND DUAL CHARACTERIZATIONS OF SIGN-SYMMETRIC NORMS. <https://arxiv.org/abs/2504.19642> (2025)
2. **Cuong N.D.,** Kruger A.Y.: GENERALIZED SEPARATION OF COLLECTIONS OF SETS. **Optimization** (WoS, Scimago) (2025)
3. **Cuong N.D.,** Kruger A.Y.: SEQUENTIAL EXTREMAL PRINCIPLE AND NECESSARY CONDITIONS FOR MINIMIZING SEQUENCES. **Optimization** (WoS, Scimago) (2025)
4. **Cuong N.D.,** Kruger A.Y., Thao H.N.: EXTREMALITY OF FAMILIES OF SETS AND SET-VALUED OPTIMIZATION. **Set-Valued and Variational Analysis** (WoS, Scimago) **33**(21) (2025)
5. Tam V.M., **Cuong N.D.,** Hien N.N., Hieu D.H.: REGULARIZED GAP FUNCTIONS FOR  $p$ -STRONGLY MONOTONE VARIATIONAL-HEMIVARIATIONAL INEQUALITIES AND APPLICATIONS TO GLOBAL ERROR BOUNDS. **TWMS Journal of Applied and Engineering Mathematics** (WoS, Scimago) **15**(6), 1448-1459 (2025)
6. **Cuong N.D.,** Kruger A.Y., Thao H.N.: EXTREMALITY OF FAMILIES OF SETS. **Optimization** (WoS, Scimago) **73**(12), 3593-3607(2024)
7. **Cuong N.D.:** TRANSVERSALITY, REGULARITY AND ERROR BOUNDS IN VARIATIONAL ANALYSIS AND OPTIMISATION. **Bulletin of the Australian Mathematical Society** (WoS, Scimago) **106**(1), 167-169 (2022)
8. **Cuong N.D.,** Kruger A.Y.: ERROR BOUNDS REVISITED. **Optimization** (WoS, Scimago) **71**(4), 1021-1053 (2022)
9. **Cuong N.D.,** Kruger A.Y.: UNIFORM REGULARITY OF SET-VALUED MAPPINGS AND STABILITY OF IMPLICIT MULTIFUNCTIONS. **Journal of Nonsmooth Analysis and Optimization** (MathSciNet indexing) **2** (2021)
10. **Cuong N.D.,** Kruger A.Y.: TRANSVERSALITY PROPERTIES: PRIMAL SUFFICIENT CONDITIONS. **Set-Valued and Variational Analysis** (WoS, Scimago) **29**(2), 221–256 (2021)
11. **Cuong N.D.,** Kruger A.Y.: PRIMAL SPACE NECESSARY CHARACTERIZATIONS OF TRANSVERSALITY PROPERTIES. **Positivity** (WoS, Scimago) **25**(2), 531–558 (2021)
12. Thao N.H., Bui T.H., **Cuong N.D.,** Verhaegen M.: SOME NEW CHARACTERIZATIONS OF INTRINSIC TRANSVERSALITY IN HILBERT SPACES. **Set-Valued and Variational Analysis** (WoS, Scimago) **28**(1), 5–39 (2020)
13. **Cuong N.D.,** Kruger A.Y.: DUAL SUFFICIENT CHARACTERIZATIONS OF TRANSVERSALITY PROPERTIES. **Positivity** (WoS, Scimago) **24**, 1313-1359 (2020)
14. **Cuong N.D.,** Kruger A.Y.: NONLINEAR TRANSVERSALITY OF COLLECTIONS OF SETS: DUAL SPACE NECESSARY CHARACTERIZATIONS. **Journal of Convex Analysis** (WoS, Scimago) **27**(1), 287–308 (2020)
15. Bui T.H., **Cuong N.D.,** Kruger A.Y.: TRANSVERSALITY OF COLLECTIONS OF SETS: GEOMETRIC AND METRIC CHARACTERIZATIONS. **Vietnam Journal of Mathematics** (WoS, Scimago) **48**, 277-297 (2020)

## Research projects

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| Dates     | Project Titles                                                                                                                              | Funding Organization                                                      | Role                   |
|-----------|---------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------|------------------------|
| 2014-2015 | <b>T2014-50.</b> Existence and stability properties in multiobjective optimization                                                          | Can Tho University                                                        | Researcher             |
| 2018-2021 | <b>DP160100854.</b> Stability of generalised equations and variational systems                                                              | Australian Research Council                                               | Researcher             |
| 2022-2023 | <b>VINIF.2022.STS.40.</b> Regularity properties of set-valued mappings and applications in convergence analysis of computational algorithms | Vingroup Innovation Foundation (VINIF),<br>Institute of Big Data (VNCDLL) | Principal Investigator |
| 2023-2024 | <b>VINIF.2023.STS.54.</b> Regularity properties of set-valued mappings and applications in convergence analysis of computational algorithms | Vingroup Innovation Foundation (VINIF),<br>Institute of Big Data (VNCDLL) | Principal Investigator |
| 2023      | <b>T2023-09.</b> Necessary and sufficient conditions for nonlinear error bounds                                                             | Can Tho University                                                        | Principal Investigator |
| 2023-2024 | <b>B2023-CTT-09.</b> Transversality/Regularity properties in variational analysis and applications                                          | Ministry of Science and Technology                                        | Principal Investigator |
| 2023-2025 | <b>B2024-CTT-03.</b> Qualitative properties of differential variational inequalities and applications                                       | Ministry of Science and Technology                                        | Researcher             |
| 2025      | <b>T2025-11.</b> Nonconvex separation results for collections of sets                                                                       | Can Tho University                                                        | Principal Investigator |

## Supervision

| Date | Name                                                  | Type                  | Title                                                                          |
|------|-------------------------------------------------------|-----------------------|--------------------------------------------------------------------------------|
| 2023 | <b>Nguyen Thi Diem My</b><br>Applied Mathematics      | Institutional Project | <b>TSV2023-19.</b> Extremal principles of collections of sets and applications |
| 2023 | <b>Nguyen Thi Diem My</b><br>Applied Mathematics      | Undergraduate Thesis  | Convex subdifferentials and related problems                                   |
| 2023 | <b>Ha Nguyen Huynh Anh</b><br>Mathematical Analysis   | Master's Thesis       | Extremal principle of collections of set-valued mappings and applications      |
| 2023 | <b>Nguyen Mai Nhat Duong</b><br>Mathematical Analysis | Master's Thesis       | Metric regularity properties of set-valued mappings and applications           |
| 2024 | <b>Do Huynh Ngoc Han</b><br>Applied Mathematics       | Undergraduate Thesis  | Differential calculus of functions of one variable and applications            |
| 2024 | <b>Doan Huu Hieu</b><br>Mathematical Analysis         | Master's Thesis       | Existences and error bounds of mixed variational-hemivariational inequalities  |
| 2025 | <b>Truong Thanh Trung</b><br>Mathematical Analysis    | Master's Thesis       | Error bounds of extended-real-valued functions and applications                |
| 2025 | <b>Nguyen Thi Thuy Duong</b><br>Applied Mathematics   | Undergraduate Thesis  | Convex subdifferentials and related problems                                   |
| 2025 | <b>Ly Thi Thuy Van</b><br>Applied Mathematics         | Undergraduate Thesis  | Clarke subdifferentials and related problems                                   |
| 2025 | <b>Thai Tuyet Nhi</b><br>Applied Mathematics          | Undergraduate Thesis  | Litmiting subdifferentials and related problems                                |
| 2025 | <b>Hoang Minh Thanh</b><br>Applied Mathematics        | Institutional Project | <b>TSV2025-09.</b> Regularity properties of collections of set-valued mappings |
| 2025 | <b>Vo Hoang Khiem</b><br>Applied Mathematics          | Undergraduate Thesis  | Subdifferentiability of convex functions and applications                      |
| 2025 | <b>Nguyen Thi Mong Trinh</b><br>Applied Mathematics   | Undergraduate Thesis  | Some properties of Banach spaces                                               |
| 2025 | <b>Nguyen Nhu Y</b><br>Applied Mathematics            | Undergraduate Thesis  | Dual spaces and related problems                                               |
| 2025 | <b>Nguyen Thi Thu Huong</b><br>Applied Mathematics    | Undergraduate Thesis  | Some problems on Hilbert spaces                                                |
| 2025 | <b>Nguyen Trong Phuc</b><br>Applied Mathematics       | Undergraduate Thesis  | Differentiation of functions on normed spaces                                  |
| 2025 | <b>Huynh Thi Kim Ngan</b><br>Applied Mathematics      | Undergraduate Thesis  | Fixed points theorems and applications                                         |

## Conferences/Workshops/Seminars

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- August 2025 [The 4th Mekong Delta Conference on Natural Sciences](#) (Kien Giang University, Vietnam)
- August 2025 [VIASM Annual Meeting 2025](#) (Hanoi, Vietnam)
- August 2025 [Seminar](#) (Can Tho University, Can Tho City, Vietnam)  
Talk: [Primal and dual characterizations of sign-symmetric norms](#)
- July 2025 [Workshop on Applied Mathematics](#)  
(Ton Duc Thang University, Khanh Hoa Campus, Vietnam)
- May 2025 [Seminar](#) (Can Tho University, Can Tho City, Vietnam)  
Talk: [Sequential extremal principle and necessary conditions for minimizing sequences](#)
- April 2025 [Seminar](#) (Da Lat University, Da Lat City, Vietnam)  
Talk: [Primal and dual characterizations of sign-symmetric norms](#)
- March 2025 [The International Workshop on Applied Mathematics 2025](#)  
(Ton Duc Thang University, Khanh Hoa Campus, Vietnam)  
Talk: [Generalized separation of collections of sets](#)
- August 2024 [The 5th International Conference: Mathematics of the Central Region and Central Highlands in 2024](#) (Khanh Hoa University, Vietnam)
- July 2024 [International Conference on Applied Mathematics](#) (Ton Duc Thang University, Vietnam)  
Talk: [Extremality of collections of sets with respect to general perturbations](#)
- Sep. 2023 [Optimization Seminar](#) (Ton Duc Thang University, Vietnam)  
Talk: [An overview on metric regularity properties](#)
- Aug. 2023 [The 10th Vietnam Mathematical Congress](#) (Da Nang University, Vietnam)  
Talk: [Necessary and sufficient conditions for transversality properties of collections of sets](#)
- July 2023 [ICOVAA 2023](#) (VIASM, Vietnam)  
Talk: [Necessary and sufficient conditions for Hölder metric regularity](#)
- July 2023 [The Workshop on Advanced Science and Technology](#) (Van Lang University)  
Talk: [Error bounds: an overview](#)
- April 2023 [The 21<sup>st</sup> Workshop on Optimzation and Sciencetific Computing](#) (Ba Vi, Ha Noi, Vietnam)  
Talk: [Characterization properties of collections of set-valued mappings](#)
- April 2023 [Optimization Webinar](#)  
Talk: [Error bounds - an overview](#)
- Feb. 2023 [Workshop on Computational Methods in Nonlinear Optimization and Applications](#)  
(Dong Thap University, Vietnam)  
Talk: [Sufficient conditions for nonlinear error bounds](#)
- Feb. 2021 [Variational Analysis and Optimisation Webinar](#) (MOCAO, Australia)  
Talk: [Necessary conditions for transversality properties of collections of sets](#)
- Dec. 2020 [The 64th AustMS Meeting](#) (Online)
- Dec. 2020 [The 5th WoMBaT](#) (Online)
- Dec. 2019 [The 4th WoMBaT](#) (Swinburne University of Technology, Australia)  
Talk: [Semitransversality of collections of set-valued mappings](#)

- Dec. 2019 [The 63rd AustMS Meeting](#) (Monash University, Australia)  
Talk: [Characterizations of Robinson regularity properties of implicit multifunctions](#)
- May 2019 [SEIT Seminar](#), (Federation University, Australia)  
Talk: [First-order and second-order sufficient conditions for nonlinear error bounds](#)
- Jan. 2019 [Confirmation of Candidature](#) (Federation University, Australia)  
Talk: [Transversality, regularity and error bounds in variational analysis and optimisation](#)
- Dec. 2018 [The 62nd AustMS Meeting](#) (The University of Adelaide, Australia)  
Talk: [Nonlinear parametric error bounds](#)
- Dec. 2018 [The 3rd WoMBaT](#) (Deakin University, Australia)  
Talk: [Nonlinear transversality properties of collections of sets](#)
- Oct. 2018 [CIAO Seminar](#) (Federation University, Australia)  
Talk: [Nonlinear parametric error bounds](#)
- Aug. 2018 [The 9th Vietnam Mathematical Congress](#) (Telecommunications University, Vietnam)  
Talk: [Nonlinear transversality properties of collections of sets](#)
- May 2018 [Workshop on Fixed Points and Applications](#) (RMIT University, Australia)
- April 2018 [CIAO Seminar](#) (Federation University, Australia)  
Talk: [Some extended versions of the extremal principle and applications](#)
- April 2018 [CIAO Showcase and Workshop](#) (Federation University, Australia)  
Talk: [Some extended versions of the extremal principle and applications](#)
- Feb. 2018 [Variational Analysis Down Under](#) (Federation University, Australia)

## Teaching

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- Oct. 2012 - Now** Lecturer, [Can Tho University](#)
- [TN001. Single Variable Calculus](#) (general course)
  - [TN002. Multivariable Calculus](#) (general course)
  - [TN006. Advanced Math A](#) (general course)
  - [TN059. Advanced Math B](#) (general course)
  - [TN009-TN009E. Advanced Math C](#) (general course)
  - [TN099. Differential and integral calculus](#) (general course)
  - [TN188. Analysis I](#) (undergraduate course in Applied Mathematics)
  - [TN155. Analysis I](#) (undergraduate course in Statistical Mathematics)
  - [TN082. Multivariable Calculus](#) (undergraduate course in Applied Mathematics)
  - [TN545. Tensor Analysis](#) (undergraduate course in Applied Mathematics)
  - [TNT619. Complex Analysis](#) (graduate course in Mathematical Analysis)
- Semester 1 - 2020** Teaching Assistant, [Federation University Australia](#)
- [MATH1001. Modelling and Change](#)
  - [MATH2003. Profit, Loss and Gambling](#)

## Referee Service

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- [ESAIM: Control, Optimisation and Calculus of Variations](#)
- [Mathematics of Operations Research](#)
- [Optimization](#)
- [Journal of Optimization Theory and Applications](#)
- [Computational Optimization and Applications](#)
- [Set-Valued and Variational Analysis](#)
- [Mathematical Reviews](#)
- [Kybernetika](#)
- [Can Tho University Journal of Science](#)

## Membership in Professional Societies

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- [Vietnam Mathematical Society](#)
- [Australian Mathematical Society](#)

## Languages

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- Vietnamese - Mother tongue
- English - Fluent written and spoken ([IELTS 7.0](#))

## References

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[Dr. Alexander Kruger](#)

**Professor**

[Federation University Australia](#)

[a.kruger@federation.edu.au](mailto:a.kruger@federation.edu.au)

[Dr. David Yost](#)

**Professor**

[Federation University Australia](#)

[d.yost@federation.edu.au](mailto:d.yost@federation.edu.au)