Daniel Marshall

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Experience

Apr - Jun 2023	★	**Research Assistant.** Institute of Cyber Security for Society, University of Kent.
May - Sep 2022	★	**Programming Language Research Intern.** Huawei Edinburgh Research Centre.
May - Jun 2019	★	**Student Developer (Google Summer of Code).** Haskell.org & CodeWorld.
Jun - Aug 2018	★	**Undergraduate Researcher.** School of Health and Related Research & Department of Computer Science, University of Sheffield.

Education

2020 – present	★	**Ph.D., University of Kent** in Computer Science. Thesis title: *Linearity, Uniqueness, Ownership: An Entente Cordiale.* (Funded by a three-year EPSRC DTP Doctoral Studentship.)
2016 – 2020	★	**M.Comp., University of Sheffield** in Computer Science with Mathematics. Dissertation title: *Verification & Correctness of Functional Programs in Isabelle/HOL.* (1st class with honours. Was awarded a Hedley Howe Engineering Scholarship.)
2014 – 2016	★	**A-Levels, Longley Park Sixth Form** in Maths (A*), Further Maths (A), Physics (A), Chemistry (A). Extended project (A*) on *"the mathematics of artificial intelligence"*.

Publications

1 **D. Marshall** and D. Orchard, "Functional Ownership through Fractional Uniqueness," *under review*, 2024, preprint available from: 🔗 URL: https://starsandspira.ls/docs/fractional.pdf.

2 V. Vollmer, **D. Marshall**, H. Eades III, and D. Orchard, "A Mixed Linear and Graded Logic: Proofs, Terms and Models," *under review*, 2024, preprint available on request.

3 **D. Marshall** and D. Orchard, "Non-Linear Communication via Graded Modal Session Types," *under revision for a special issue of Information and Computation*, 2023, preprint available from: 🔗 URL: https://starsandspira.ls/docs/graded-sessions.pdf.

4 **D. Marshall** and D. Orchard, "Graded Modal Types for Integrity and Confidentiality," in *17th Workshop on Programming Languages and Analysis for Security (PLAS 2022)*, Dec. 2022. 🔗 URL: https://plas2022.github.io/files/pdf/integrity.pdf.

5 **D. Marshall** and D. Orchard, "How to Take the Inverse of a Type," in *36th European Conference on Object-Oriented Programming (ECOOP 2022)*, K. Ali and J. Vitek, Eds., ser. Leibniz International Proceedings in Informatics (LIPIcs), vol. 222, Dagstuhl, Germany: Schloss Dagstuhl – Leibniz-Zentrum für Informatik, 2022, 5:1–5:27, ISBN: 978-3-95977-225-9. 🔗 DOI: 10.4230/LIPIcs.ECOOP.2022.5.

6 **D. Marshall** and D. Orchard, "Replicate, Reuse, Repeat: Capturing Non-Linear Communication via Session Types and Graded Modal Types," *Proceedings of PLACES 2022, Electronic Proceedings in Theoretical Computer Science*, vol. 356, pp. 1–11, Mar. 2022. 🔗 DOI: 10.4204/eptcs.356.1.

7 **D. Marshall**, M. Vollmer, and D. Orchard, "Linearity and Uniqueness: An Entente Cordiale," in *Programming Languages and Systems. ESOP 2022*, I. Sergey, Ed., Cham: Springer International Publishing, 2022, pp. 346–375, ISBN: 978-3-030-99336-8. 🔗 DOI: 10.1007/978-3-030-99336-8_13.

8 J. Hughes, **D. Marshall**, J. Wood, and D. Orchard, "Linear Exponentials as Graded Modal Types," in *5th International Workshop on Trends in Linear Logic and Applications (TLLA 2021)*, Rome (virtual), Italy, Jun. 2021. 🔗 URL: https://hal-lirmm.ccsd.cnrs.fr/lirmm-03271465.

Teaching

Spring 2023	⭐	**COMP5450 Functional Programming**. University of Kent.
Autumn 2022	⭐	**COMP5190 Theory of Computing**. University of Kent.
Spring 2022	⭐	**COMP5450 Functional Programming**. University of Kent.
Spring 2021	⭐	**COMP5450 Functional Programming**. University of Kent.
Autumn 2018	⭐	**Introduction to Web Development**. Code First: Girls.

Talks

Jun 2023	⭐	**A Hitchhiker's Guide to Linearity**. Lambda Days, Kraków.
Aug 2022	⭐	**How to Take the Inverse of a Type**. WhatsApp Dev Infra, London.
Jun 2022	⭐	**Graded Modal Session Types**. Meeting on Graded Types, University of Kent.
Apr 2022	⭐	**Linearity and Uniqueness: An Entente Cordiale**. Seminar, University of Glasgow.
	⭐	**Linearity, Uniqueness, Ownership: An Entente Cordiale**. Midlands Graduate School, University of Nottingham.
Mar 2022	⭐	**Linearity and Uniqueness: An Entente Cordiale**. Seminar, University of Kent.
Sep 2019	⭐	**Morita Theory in Abelian Categories**. Seminar, University of Sheffield.
Apr 2019	⭐	**A High-Performance Agent-Based Model of Tuberculosis Transmission**. British Conference of Undergraduate Research, University of South Wales.
Mar 2019	⭐	**Elm: Putting the Fun in Functional**. Global Diversity CFP Day, Sheffield.

Miscellanea

Achievements

Jun 2023	⭐	**Postgraduate Researcher Award**. Graduate and Researcher College, University of Kent.
Jun 2022	⭐	**Distinguished Paper and Distinguished Artifact awards**. ECOOP 2022.
Jan 2022	⭐	**First Place (Student Research Competition, Graduate Category)**. POPL 2022.
Nov 2021	⭐	**Best Poster**. Ph.D. Showcase, School of Computing, University of Kent.
Feb 2018	⭐	**Best Pitch for Funding**. Engineering: You're Hired!, University of Sheffield.
Oct 2017	⭐	**Best Use of a .tech Domain**. HackSheffield 3.0.

Service

2022 - 2023	⭐	**Artifact Evaluation Committee**. POPL 2023, ICFP 2022, PLDI 2022.
2019 - 2022	⭐	**Student Volunteer**. OOPSLA '22, ICFP '21, POPL '21, ICFP '20, PLDI '20, ICFP '19.
2018 - 2020	⭐	**Publicity Media Officer**. LGBTQ+ Liberation Committee, Sheffield Students' Union.
2017 - 2020	⭐	**Senior Student Ambassador**. Department of Computer Science, University of Sheffield.
2016 - 2018	⭐	**Academic Representative**. School of Mathematics and Statistics, University of Sheffield.

References

Available on request.

(This CV was last updated on September 5, 2023. The latest version is always available from
`https://starsandspira.ls/docs/cv.pdf`.)