LUKE ELLIOTT

University of St Andrews

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PROGRAMMING EXPERIENCE

I wrote the "autshift" GAP package (I'm still adding to this) as well as most of the "aaa" GAP package and I did some work on the "digraphs" GAP package. I also like to program in my free time. For example: I have done many of the puzzles on leet code (see my account here), including all of the non-subscription ones in the google "Data Structures and Algorithms" Tech Dev Guide; in 2018 I made a multiplayer python game in which the players fight by jumping on top of the other ones's character; when doing the "Advanced Symbolic Computation" module as an undergraduate I competed in the optional weekly "coding golf" challenges in which I was always in the top 3 of the year.

Programming Languages:

GAP, C++, Python, Visual Basic.

DEGREES

2018-2021 St Andrews – PhD Pure Mathematics
Thesis: On constructing topology from algebra
Submission date: 27/9/2021
Viva date: December 16th 2021

WORK EXPERIENCE

- 2022 Research Fellow, University of St Andrews
  Programming (in GAP) algorithms for working with elements of the rational group of Grigorchuk, Nekrashevich, and Suschanskii as described in their paper of 2000. Also, the groups of automorphisms of the shift on n-letters (both one-sided and two-sided).
- 2018-2021 PhD Student at the University of St Andrews.
- 2017 Laidlaw Undergraduate Research and Leadership Program: Writing algorithms concerning commutative semigroups supervised by Prof James Mitchell.

AWARDS

St Andrews Dean's list: 2015, 2016, 2017, 2018
Scottish Maths Council "Maths Challenge" gold awards.

POSITIONS OF RESPONSIBILITY

2016-2022: Treasurer of St Andrew's Anime Society
2019: Organiser of St Andrews PhD student burn trip (with 4 other organisers).

INTERESTS

Programming, Maths, Japanese, Anime, Video/Board games.

EDUCATION

St Andrews University – MMath (Hons) Mathematics (Fast Track):

- 2017/18, Average grade: 19.1/20.
  Topics: Semigroups, Groups, Algebraic Topology, Real Analysis.
- 2016/17, Average grade: 19.3/20
  Topics: Advanced Symbolic Computation, Graph Theory, Measure Theory, Real Analysis, Galois Theory, Groups.
- 2015/16, Average grade: 17.5/20
  Topics: Finite Maths, Real and Complex Analysis, Differential Equations, Linear Maths, Rings and Fields, Maths Programming, Number Theory, Statistical Inference, Topology.
- 2014/15, Average grade: 18.5/20
  Topics: Problem-solving, Combinatorics and Probability, Calculus, Abstract Algebra, Linear Maths, Modelling.

ACADEMIC PAPERS

- L. Elliott, J. Jonuŝas, J. D. Mitchell, Y. Péresse, and M. Pinsker. Polish topologies on endomorphism monoids of relational structures, submitted, 2022
- J. Belk, L. Elliott, and F. Matucci. A short proof of Rubin's theorem, submitted, 2022
- L. Elliott. Unindexed subshifts of finite type and their connection to automorphisms of Thompson's groups, 2021
- L. Elliott, J. Jonuŝas, Z. Mesyan, J. D. Mitchell, M. Morayne, and Y. Péresse. Automatic continuity, unique Polish topologies, and Zariski topologies on monoids and clones, submitted, 2021
- L. Elliott. A description of Aut(dVn) and Out(dVn) using transducers, submitted, 2020
- C. Bleak, L. Elliott, and J. Hyde. Sufficient conditions for a group of homeomorphisms of the cantor set to be two-generated, submitted, 2020

REFERENCES

- Dr Collin Bleak: PhD Supervisor
  Email: cb211@st-andrews.ac.uk
- Prof. James Mitchell: PhD Supervisor
  Email: jdm3@st-andrews.ac.uk