Murray **Tannock**

20 Greygoran, Sauchie, Clackmannanshire, Scotland, United Kingdom, FK10 3EN

(+64) 22 206 0434 | murraytannock@gmail.com | MurrayT

Education

University of Otago

Dunedin, New Zealand

PH.D. COMPUTER SCIENCE — *Feb. 2017 -*

- Supervised by Michael Albert

University of Reykjavik

Reykjavik, Iceland

M.SC. COMPUTER SCIENCE — *Aug. 2014 - Jul, 2016*

- M.Sc. Thesis - *Equivalence Classes of Mesh Patterns with a Dominating Pattern*
  - Supervised by Henning Ulfarsson.
  We completely classify the equivalence classes of avoiders of a length 2 mesh pattern and a length 3 pattern. We then examine some of the Wilf-equivalence classes, and some of the interesting enumerations derived from these equivalence classes.

University of St Andrews

St Andrews, United Kingdom

B.SC. (HONS.) MATHEMATICS — *Aug. 2010 - Jun. 2014*

- B.Sc. Final Project - *Turing Machines and Complexity Theory* - Supervised by Colva M. Roney-Dougal.
  A study of Turing machines and their relation to complexity classes, followed by a look into quantum complexity theory and the implications of practical quantum computation.

Teaching Experience

University of Otago

Dunedin, New Zealand

TEACHING ASSISTANT — *Jan. 2017 - PRESENT*

Grading of continual assessment. Assistance in Labs

COSC326 Effective Programming — *Summer School 2017, Sem. 1 2017, Sem. 2 2018*

University of Reykjavik

Reykjavik, Iceland

TEACHING ASSISTANT — *Aug. 2015 - Dec. 2016*

Grading of continual assessment and exams. Provision of assistance during class.
Improval of logistics for assignment, collection and grading of programming assignments.

T-317-CAST Calculus and Statistics	*Fall 2016*
T-218-ALCO Algebra and Combinatorics	*Spring 2016*
E-402-STFO Mathematical Programming (3-week course)	*Winter 2015, Winter 2016*
T-713-CRNU Cryptography and Number Theory	*Fall 2015, Fall 2016*

CO-SUPERVISOR OF B.SC. PROJECTS IN COMPUTER SCIENCE — *Spring 2015*

Co-supervised two B.Sc. students at RU in undergraduate research project in association with H. Ulfarsson and Christian Bean.

Publications and Preprints

Pattern avoiding permutations and independent sets in graphs

C. BEAN, M. TANNOCK, H. ULFARSSON — *Submitted 2016*

We establish a bijection between independent sets in a family of graphs and avoiders of the permutation 132. We then extend these methods to other permutation classes.

`http://arxiv.org/abs/1512.08155`

Equivalence classes of mesh patterns with a dominating pattern

Discrete Mathematics & Theoretical Computer Science

M. TANNOCK, H. ULFARSSON — *Vol. 19 no. 2, Permutation Patterns 2016*

Two mesh patterns are coincident if they are avoided by the same set of permutations, and are Wilf-equivalent if they have the same number of avoiders of each length. We provide sufficient conditions for coincidence of mesh patterns, when only permutations also avoiding a longer classical pattern are considered. Using these conditions we completely classify coincidences between families containing a mesh pattern of length 2 and a classical pattern of length 3. Furthermore, we completely Wilf-classify mesh patterns of length 2 inside the class of 231-avoiding permutations.

`http://dmtcs.episciences.org/paper/view/id/4265`

Refereeing Work for Journals

Discrete Mathematics & Theoretical Computer Science, Special Edition for Permutation Patterns 2015

Presentations and Talks

Permutation Patterns 2015 — *London, United Kingdom*

Pattern Avoidance and Non-Crossing Subgraphs of Polygons. — *June 2015*

Joint work with C. Bean and H. Ulfarsson

25th British Combinatorial Conference — *University of Warwick, United Kingdom*

Pattern Avoidance and Non-Crossing Subgraphs of Polygons. — *June 2015*

Joint work with C. Bean and H. Ulfarsson

Permutation Patterns 2016 — *Washington D.C., USA*

Equivalence classes of mesh patterns with a dominating pattern — *June 2016*

5th International Combinatorics Conference — *Monash University, Australia*

Patterns in Arc Systems — *December 2017*

Other Projects

Permuta

Pure Python module for Permutation Patterns

Permutation Pattern Library designed for research group at RU. Joint work with Bjarki Agust Gudmundsson, Tomas Ken Magnusson and H. Ulfarsson.

SageTest

Testing Library for SageMathCloud

Basic Testing suite for SageMathCloud to allow for automated grading in courses at RU using the SageMath System.

SMCHomeworkGeneration

Semi-automated Assignment generation for SageMathCloud

Automated Assignment generation for SageMathCloud compatible with SageTest providing faster deployment of asignments in classes involving programming assignments.

OEIS.jl

OIES Wrapper for the *Julia* Programming Language

Allows access to *The On-Line Encyclopedia of Integer Sequences®* from within a Julia script or REPL session.

Conferences attended

2015	**Permutation Patterns 2015,** 15-19 Jun.	*London, United Kingdom*
2015	**25th British Combinatorial Conference,** 6-10 Jul.	*University of Warwick, United Kingdom*
2015	**Stærðfræði á Íslandi 2015,** Mathematics in Iceland, 31 Oct.-1 Nov.	*Selfoss, Iceland*
2016	**Permutation Patterns 2016,** 27 Jun.-1 Jul.	*Washington D.C., USA*
2017	**5th International Combinatorics Conference,** 4 Dec.-9 Dec.	*Melbourne, Australia*

Skills

Programming Python, LaTeX, Java, Scala, Julia, FORTRAN, Maple, R, Ruby, HTML, CSS and Javascript

References

Teaching

Henning Ulfarsson *Reykjavik, Iceland*

School of Computer Science, University of Reykjavik,
Menntavegi 1, 101 Reykjavik, ICELAND
(+354) 899 8552 | henningu@ru.is

Academic

Michael Albert *Dunedin, New Zealand*

Department of Computer Science, University of Otago,
PO Box 56, Dunedin 9054, New Zealand
malbert@cs.otago.ac.nz