

# Murray Tannock

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## 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.
- Expected Graduation - June 2016

### 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 Reykjavik

Reykjavik, Iceland

TEACHING ASSISTANT

Aug. 2015 - PRESENT

Grading of continual assessment and exams. Provision of assistance during class.  
Improvement 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>

## 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

Pattern Avoidance and Non-Crossing Subgraphs of Polygons.

Joint work with C. Bean and H. Ulfarsson

## Permutation Patterns 2016

Equivalence classes of mesh patterns with a dominating pattern

University of Warwick, United

Kingdom

June 2015

Washington D.C., USA

June 2016

## Other Projects

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### 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 assignments 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

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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

## Skills

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**Programming** Python,  $\text{\LaTeX}$ , Java, Julia, FORTRAN, Maple, R, Ruby, HTML, CSS and Javascript

## References

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### TEACHING

#### Henning Ulfarsson

Reykjavik, Iceland

SCHOOL OF COMPUTER SCIENCE, UNIVERSITY OF REYKJAVIK,

MENNÞAVEGI 1, 101 REYKJAVIK, ICELAND

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### ACADEMIC

#### Colva M. Roney-Dougal

St Andrews, United Kingdom

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