

# Stephen James Drape

Date of Birth: 5th October 1972

Place of Birth: Bridlington, East Riding of Yorkshire, UK

Nationality: British Citizen

## Employment

- 2006 – 2007 Postdoctoral Research Fellow at the University of Auckland. Working with Professor Clark Thomborson on topics related to obfuscation. Helping to supervise MSc and PhD students in obfuscation and watermarking.
- 2005 Research Assistant at the University of Hull working on an intercultural education project involving partners from Greece and Romania. Presented a talk at a conference in Syros, Greece.
- 2001 – 2004 Teaching for the Computing Laboratory including demonstrating practicals for Functional Programming, Procedural Programming, Databases and Compilers and giving MSc classes for Software Specification. Marking the Maths entrance test in 2003 and mentoring a student for University College.
- 1995 – 2000 Maths and IT teacher at Cottingham High School, East Yorkshire. Taught mainly KS4 Maths and IT and A-Level Maths and Further Maths. Assistant Head of Year for two years and form tutor for five years.

## Other Experiences

- 2002 – 2004 Graduate rep for the Programming Research Group. Assisting with the departmental open days.
- 1995 – 2005 Member of the Mathematical Association “Post-16” Teaching Subcommittee. The committee discusses issues related to the teaching of A-Level Mathematics and produces material to assist teachers. I was the secretary for three years and co-editor of two volumes of “Problem Pages”.
- 2006 – 2007 Reviewer for *Journal of Systems and Software* (published by Elsevier), *SAC'07* (ACM Symposium on Applied Computing) and *IET Software*.

## Education

- 2001 – 2004 **Oxford University Computing Laboratory**  
DPhil in Computer Science (funded by a Microsoft donation). Topic: Obfuscation of Abstract Data-Types  
Submitted in September 2004  
Viva passed in December 2004
- 2000 – 2001 **Oxford University Computing Laboratory**  
MSc in Computer Science (funded by EPSRC)  
Topics studied include: Functional and Procedural Programming, Software Specification  
Dissertation: Functional Cryptography
- 1994 – 1995 **Hull University**  
PGCE in Mathematics
- 1991 – 1994 **St John’s College, Oxford University**  
BA in Mathematics  
Converted to MA in 1999
- 1984 – 1991 **Bridlington School, East Yorkshire**  
A-Levels: Chemistry (A), Maths (A+B+S2), Physics (B)

## Computer Science Publications

- “*Slicing Aided Design of Obfuscating Transforms*” by Stephen Drape and Anirban Majumdar. Accepted for the IEEE/ACIS Conference (ICIS 2007). Melbourne, Australia, July 11-13 2007.
- “*Generalising the Array Split Obfuscation*” by Stephen Drape, in Information Sciences, Volume 177, Issue No 1, pages 202–219, Jan 2007.
- “*A Survey of Control-Flow Obfuscations*” by Anirban Majumdar, Clark Thomborson and Stephen Drape, in ICISS 2006, Kolkata, India, 2006.
- “*An Obfuscation for Binary Trees*” by Stephen Drape, to appear in TENCON 2006, Hong Kong.
- “*Obfuscation of Abstract Data-Types*” by Stephen Drape, DPhil thesis, The University of Oxford, 2004.
- “*Using Haskell to Model Tree Obfuscations*” by Stephen Drape, Tech Report PRG-RR-04-17, Oxford University Computing Laboratory, 2004.
- “*The Matrix Obfuscated*” by Stephen Drape, Tech Report PRG-RR-04-12, Oxford University Computing Laboratory, 2004.

- “*Obfuscating Set Representations*” by Stephen Drape, Tech Report PRG-RR-04-09, Oxford University Computing Laboratory, 2004.
- “*Transforming the .NET Intermediate Language using Path Logic Programming*” by Stephen Drape, Oege de Moor and Ganesh Sittampalam, In PPDP, pages 133–144, ACM Press, 2002 .
- “*Functional Cryptography*” by Stephen Drape, MSc dissertation, The University of Oxford, 2001.

## Research Interests

The topic of my thesis was *obfuscation* — a technique is used to make reverse engineering more difficult by making a program harder to understand. My approach looked at obfuscating data-types by modelling the methods of a data-type in a functional language and using data-refinement to perform the obfuscations. This approach enabled me to prove the correctness of all my obfuscations. A new definition of obfuscation was proposed which measures the complexity of proofs of assertions. Future work in this area will be to apply these methods to imperative programs and to continue to find new, interesting obfuscations.

## Referees

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