David H. White

www.david-white.net

CONTACT INFORMATION

white.dh@gmail.com

EDUCATION

PhD Computer Science, University of York, UK **[2005 - 2009]**

- Thesis title: Generative Models for Graphs
- Supervisor: Prof. Richard C. Wilson
- Part of the Computer Vision & Pattern Recognition Group.
- Awarded a 3 year EPSRC studentship to fund this research.
- Detail: The aim of this research was to develop methods of constructing generative models over sets of relational graphs. In other words, given a set of graphs how could new graphs be generated that were drawn from the distribution of the original set? My main contributions were a) a generative model based on a vectorization of graph structure, b) a generative model that made use of a parts-based approach and c) applying these approaches to provide a generative model for chemical structure. This model was combined with existing knowledge about the structure of drugs for a specific pharmacological target to generate a set of new potential drug candidates. More can be found out about this research at my website [www.david-white.net] or the publications listed below.

MEng Computer Systems & Software Eng., University of York, UK **[2001 - 2005]**

- Awarded with First-Class Honours.
- 3rd Year Project: Developed the use of the safety-critical synchronous language *Lustre*, programming tool *SCADE* and implementation platform *Lego Mindstorms* as a reactive systems teaching method.
- 4th Year Project: Investigated methods for speeding up the machine-learning technique *reinforcement learning* through parallization.
- The degree covered the following aspects of computer science:

Software Specification & Architectures	Embedded Systems
Constraint Programming	Real-time Systems
Non-standard Computation	Cryptology
Adaptive & Leaning Agents	Operating Systems
Compiler Construction & Optimization	Networks & Distributed Systems
Formal Program Development	Hardware Architectures
Relational Databases	

Banchory Academy, Aberdeenshire, UK **[1995 - 2001]**

- CSYS (2001): Maths I (A), Maths V (Mechanics) (A), Physics (A)

SELECTED PUBLICATIONS

D. White, T. Rupprecht, and G. Lüttgen. DSI: An Evidence-based Approach to Identify Dynamic Data Structures in C Programs. In *Intl. Symposium on Software Testing and Analysis* (ISSTA 2016), pp. 259-269. ACM, 2016. (DOI: 10.1145/2931037.2931071)

J. Mühlberg, D. White, M. Dodds, G. Lüttgen and F. Piessens. Learning Assertions to Verify Linked-list Programs. In *Intl. Conf. on Software Engineering and Formal Methods* (SEFM 2015), LNCS 9276, pp. 37-52. Springer, 2015. (DOI: 10.1007/978-3-319-22969-0_3)

D. White. dsOli: Data Structure Operation Location and Identification. In *Intl. Conf. on Program Comprehension* (ICPC 2014), pp. 48-52. ACM, 2014. (DOI: 10.1145/2597008.2597800)

D. White and G. Lüttgen. Identifying Dynamic Data Structures by Learning Evolving Patterns in Memory. In *Intl. Conf. on Tools and Algorithms for the Construction and Analysis of Systems* (TACAS 2013), pp. 354-369, 2013. (DOI: 10.1007/978-3-642-36742-7_25)

D. White and R. C. Wilson. Generative models for chemical structures. *Journal of Chemical Information and Modeling*, 50(7):1257-1274, 2010. (DOI: 10.1021/ci9004089)

D. White and G. Lüttgen. Embedded systems programming: Accessing databases from Esterel. *EURASIP Journal on Embedded Systems*, 2008(1):961036, 2008. (DOI: 10.1155/2008/961036)

Professional Experience

Manager, Peanuts Education, Taiwan **October 2016 - Present**

I am currently employed by an after-school education institute in Tainan, which assists pupils in learning English, maths, science, art and design. Work relevant to my profession has thus far concerned implementing a bespoke system using Google Apps to manage student and teacher attendance, as well as tracking payment of course fees. In addition, I have been responsible for planning and scheduling courses; hiring and training staff; website design and maintenance; and payroll and accounting. Finally, I have used the experience gained during my academic career to assist pupils in learning English.

Postdoc, University of Bamberg, Germany **October 2009 - August 2016**

My current research concerns the combination of techniques from program analysis, machine learning and pattern recognition to automatically infer data structure usage information from program executions. The information determined from such an analysis is used to inform formal verification, understand legacy code and aid in reverse engineering. The last of which is of key importance given the increasing risks from Malware. Despite having relocated to Taiwan, I continue to work together with my colleagues on this line of Research. During my Postdoc my teaching responsibility has covered compiler construction, C programming, software engineering, parallel programming, cell processor programming and various seminars.

Summer Internship, University of York, UK **Summer 2004**

Over the summer holidays in 2004, I was awarded a Nuffield bursary to perform research in the area of my 3rd year degree project: synchronous reactive systems and Lego Mindstorms robotics. The project centered on Esterel, an imperative language for specifying synchronous reactive systems which can automatically generate code implementing a specification. By extending Esterel with an API to allow database access from within Esterel, two traditionally separate parts of the design process can be brought together, allowing data retrieved from the database to be processed directly by the reactive kernel Esterel generates.

Grants & Scholarships

- Case for Support Co-author on *Learning Data Structure Behaviour from Executions of Pointer Programs*. Grant No. DFG LU 1748/4-1, EUR 325,003, 2014.
- Recipient of *EPSRC Postgraduate Research Scholarship*, 2005-2008.
- Recipient of *Nuffield Foundation Undergraduate Research Bursary*, 2004.

Awards

- Joint first place in *Best Undergraduate Project in the Year*, 2005.

Computer Skills

- Operating Systems: Linux, Microsoft Windows.
- Programming: C/C++, Haskell, OCaml, Python, PHP, Prolog. Some experience with: Java, Matlab.
- Source Control: Git
- Publishing: LaTeX 2_ε, Inkscape, HTML/CSS, Microsoft Word/Powerpoint.

Referees

Prof. Dr. Gerald Lüttgen
Lehrstuhl für Softwaretechnik und Programmiersprachen
Otto-Friedrich-Universität Bamberg
Raum 03.014, An der Weberei 5, 96047, Bamberg, DE
gerald.luettgen@swt-bamberg.de

Prof. Richard C. Wilson
Department of Computer Science
University of York
CSE/112, Deramore Lane, York, YO10 5GH, UK
wilson@cs.york.ac.uk