

# Tom Lodge

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## Research Fellow, Full-stack developer

I am a Research Fellow and developer at Nottingham University. I have worked on a broad variety of projects, with a wide range of industrial partners and have built up expertise in technologies right across the stack. My doctorate investigated the utility of ad-hoc, short-range (Bluetooth) networks for large-scale data collection. I love frontend work, and my most recent project has involved the design and implementation of an online IDE for constructing privacy preserving IoT apps (React Redux and Docker). You can see examples of my work at <https://tomlodge.info/sc>

**Recent projects**    **IoT Databox** EPSRC Funded    2015-present

This project is developing a clean-slate privacy-focused infrastructure to provide users with full control of their personal data. It is principally focused on IoT data; the number of devices that capture and record information about us is expected to rise to unprecedented levels, creating challenges around privacy and data liability. The project is a collaboration with **Cambridge University, Imperial College and various industrial partners**. I have developed an online IDE for constructing privacy preserving apps.

**User Centric Networking** European Union Funded    2014-2016

This project was a multi-institution collaboration (**Technicolor, Eurecom, Fraunhofer, Intamac, University of Cambridge, University of Nottingham, Martel Consulting, Inria, Portugal Telecom**) that is developing content and recommendation systems based upon user networking behaviour. In collaboration with ethnographers, I have built data visualisation tools (d3.js) that support detailed analysis and tagging of network data being collected in households across France and the UK.

**Communities in the Clouds** Research Councils UK Funded    2014

I ran a pilot project in collaboration with **Microsoft Research** that investigated the role that technology might play in supporting residents living in high-rise and high-density communities. The project was composed of several strands: data analysis and visualisation (of forum data), ethnography and a workshop with industry professionals. One exciting outcome from the project has been the chance to run technology trials in a large flagship East London housing estate.

**Becoming Dataware** Horizon Digital Economy Funded    2012-2014

This project investigated how users might take greater control and ownership of their 'digital footprint' by considering a locally controlled hosted and managed personal data store that permits constrained queries by third parties (energy companies/supermarkets etc). I developed and extended code (python) to create a proof-of-concept home router that collected energy and network data which could be interrogated by (OAuth) permitted third parties. The software ran on a small form factor, Linux arm computer (dreamplug).

**Homework** EPSRC Funded    2009-2012

A four-year, five-institution (**Nottingham, Imperial, Glasgow, Nottingham, Microsoft and**

**BT**) collaboration looking at the design and provision of tools to improve support for home networking. I was part of a team that built a Linux router (running [Nox/Open vSwitch](#)) and developed two iphone/ipad apps that supported novel visualisation and control of a local home network.

Employment	<b>University of Nottingham</b> Horizon Digital Economy Research Fellow			2013-current
	<b>Queen Mary, University of London</b> Open & Distance Learning Research Fellow			2002-2005
	<b>University College London</b> Networks and Multimedia Research Research Fellow			2000-2002
Education	<b>University of Nottingham</b> Phd Opportunistic Data Collection in People Centric Sensor Networks			2007-2012
	<b>University College London</b> MSc Data Communications Networks and Distributed Systems Award: Distinction			1999-2000
	<b>Queen Mary, University of London</b> BSc Computer Science Award: First Class, Drapers Award for 'outstanding academic achievement'			1996-1999
Key Tech Skills	<b>Frontend</b> react/redux react native d3  ios (Objective-C) android (Java)  css, sass, less webpack	<b>Backend</b> node.js python (flask) jekyll java python  mysql postgresql mongoDB neo4j	<b>Devops</b> amazon EC2 heroku docker kubernetes (a little) nginx	
	<b>see:</b> <a href="http://github.com/tlodge">http://github.com/tlodge</a>			

## Publications

- Urquhart, L., Lodge, T. and Crabtree, A. (2018) **Demonstrably doing accountability in the Internet of Things**, International Journal of Law and Technology.
- Lodge, T., Crabtree, A. and Brown, A. (2018) **IoT app development: supporting data protection by design and default**, Proceedings of the 2018 Joint Conference and International Symposium on Pervasive and Ubiquitous Computing and Wearable Computers, pp. 901-910, Singapore, ACM Press.
- Lodge, T., Crabtree A. and Brown, A. (2018) **Developing GDPR compliant apps for the edge**, Proceedings of the 13th International Workshop on Data Privacy Management, pp. 313-328, Barcelona, Springer.
- Crabtree, A., Lodge, T., Colley, J., Greenhalgh, C., Glover, K., Haddadi, H., Amar, Y., Mortier, R., Li, Q., Moore, J., Wang, L., Yadav, P., Zhao, J., Brown, A., Urquhart, L. and McAuley, D. (2018) **Building accountability into the internet of things: the IoT Databox model**, Journal of Reliable Intelligent Environments, vol. 4 (1), pp. 39-55.
- Goulden, M., Tolmie, P., Mortier, R., Lodge, T., Pietilainen, A.K. and Teixeira, R., 2018. **Living with interpersonal data: observability and accountability in the age of pervasive ICT**. *New Media & Society*, 20(4), pp.1580-1599.
- Crabtree, A., Lodge, T., Colley, J., Greenhalgh, C. and Mortier, R. (2017) **Accountable IoT? Outline of the Databox model**, International Symposium on a World of Wireless, Mobile, and Multimedia Networks, pp. 1-6, Macau, IEEE.
- Mortier, R., Zhao, J., Crowcroft, J., Li, Q., Wang, L., Haddadi, H., Amar, Y., Crabtree, A., Colley, J., Lodge, T., Brown, A., McAuley, D. and Greenhalgh, C. (2016) **Personal data management with the Databox: what's inside the box?**, Proceedings of the ACM Workshop on Cloud-Assisted Networking, pp. 49-54, Irvine, ACM.
- Crabtree, A., Lodge, T., Colley, J., Greenhalgh, C. and Mortier, R. (2016) **Building accountability into the Internet of Things**, Social Science Research Network, DOI 10.13140/RG.2.2.27512.44803
- Crabtree, A., Lodge, T., Colley, J., Greenhalgh, C., Mortier, R. and Haddadi, H. (2016) **Enabling the new economic actor: data protection, the digital economy, and the Databox**, Personal and Ubiquitous Computing, vol. 20 (6), pp. 947-957.
- Crabtree, A., Rodden, T., Tolmie, P., Mortier, R., Lodge, T., Brundell, P. and Pantidi, N., 2015. **House rules: the collaborative nature of policy in domestic networks**. *Personal and Ubiquitous Computing*, 19(1), pp.203-215.
- Lodge, T., Rodden, T. and Mortier, R., 2013, September. **Communities in the clouds: support for high-rise living**. In *Proceedings of the 2013 ACM conference on Pervasive and ubiquitous computing adjunct publication* (pp. 829-836). ACM.
- Mortier, R., Houghton, R., Skatova, A., Wagner, C., Lodge, T., Shao, J., Goulding, J., Madhavapeddy, A. and Crowcroft, J., **Becoming Dataware**.
- Skatova, A., Johal, J., Houghton, R., Mortier, R., Bhandari, N., Lodge, T., Wagner, C., Goulding, J., Crowcroft, J. and Madhavapeddy, A., 2013. **Perceived risks of personal data sharing**. *Proc. Digital Economy: Open Digital* (Nov. 2013).
- Lodge, T., 2012. **Opportunistic data collection in people-centric sensor networks**. (Doctoral dissertation, University of Nottingham).
- Mortier, R., Rodden, T., Tolmie, P., Lodge, T., Spencer, R., Sventek, J. and Koliousis, A., 2012, October. **Homework: Putting interaction into the infrastructure**. In *Proceedings of the*

25th annual ACM symposium on User interface software and technology (pp. 197-206). ACM.

Pediaditakis, D., Gopalan, A., Dulay, N., Sloman, M. and Lodge, T., 2012, July. **Home network management policies: Putting the user in the loop.** In **Policies for Distributed Systems and Networks (POLICY)**, 2012 IEEE International Symposium on (pp. 9-16). IEEE.

Mortier, R., Rodden, T., Lodge, T., McAuley, D., Rotsos, C., Moore, A.W., Koliouisis, A. and Sventek, J., 2012, January. **Control and understanding: Owning your home network.** In **Communication Systems and Networks (COMSNETS)**, 2012 Fourth International Conference on (pp. 1-10). IEEE.

Mortier, R., Bedwell, B., Glover, K., Lodge, T., Rodden, T., Rotsos, C., Moore, A.W., Koliouisis, A. and Sventek, J., 2011, August. **Supporting novel home network management interfaces with OpenFlow and NOX.** In **ACM SIGCOMM Computer Communication Review** (Vol. 41, No. 4, pp. 464-465). ACM.

Sventek, J., Koliouisis, A., Sharma, O., Dulay, N., Pediaditakis, D., Sloman, M., Rodden, T., Lodge, T., Bedwell, B., Glover, K. and Mortier, R., 2011, May. **An information plane architecture supporting home network management.** In **Integrated Network Management (IM)**, 2011 IFIP/IEEE International Symposium on (pp. 1-8). IEEE.

Flintham, M., Greenhalgh, C., Lodge, T., Chamberlain, A., Paxton, M., Jacobs, R., Watkins, M. and Shackford, R., 2011, November. **A case study of exploding places, a mobile location-based game.** In **Proceedings of the 8th International Conference on Advances in Computer Entertainment Technology** (p. 30). ACM.

Lodge, T. and Radenkovic, M., 2007, March. **Towards mass scale environmental monitoring by the public.** In **Proceedings of the Third IASTED European Conference on Internet and Multimedia Systems and Applications** (pp. 69-74). ACTA Press.

Flintham, M., Greenhalgh, C., Greenman, A., Lodge, T., Mortier, R., Jacobs, R., Watkins, M. and Shackford, R., **Towards a Platform for Urban Games.**

Radenkovic, M. and Lodge, T., 2006. **Engaging the public through mass-scale multimedia networks.** *IEEE MultiMedia*, (3), pp.12-15.