

# Richard Southern

Researcher, Lecturer, Programmer, Leader

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Showreels: [\[Virtual Production\]](#) [\[Simulation\]](#)

## SUMMARY

Experienced leader in Engineering, Research and Higher Education. 20+ years of R&D and teaching experience in virtual reality, rendering and simulation. Extensive links to VFX, Animation and Games industries.

## SELECTED PROJECTS

### **Sustainable Virtual Production 2020–2022**

Developing infrastructure to support research and teaching in the sustainability of [Virtual Production](#). To date this project has acquired £500k of external and internal funding. Personal contributions include research leadership, consortium building, consultancy and mentoring. [\[showreel\]](#) [\[site\]](#) [\[promo\]](#)

### **VFX Fluid Simulation 2013–2022**

Developing fluid simulation techniques and related applications to address challenges in the Visual Effects industry. Personal contributions include research, consultancy, supervision and software development. [\[3, 4, 5\]](#) [\[showreel\]](#) [\[code\]](#)

### **The Bystander Project 2008–2011**

A VR experiment to establish the influence of group affiliation on the bystander effect. Personal contributions include research, team leadership and software development. [\[1, 2\]](#)

## EMPLOYMENT HISTORY

### **Lead Research Engineer 2023–now**

[Foundry](#).

Leading a team in the development of new Machine Learning and Computer Vision approaches to support emerging artist post-production workflows in Foundry's compositing software [Nuke](#).

### **Lead Developer 2022–2023**

[Foundry](#).

Leading the performance team on Foundry's lighting and lookdev solution [Katana](#), delivering performance improvements and scene navigation tools for v6.1 and v7.0

### **Head of Department 2019–2022**

[NCCA, Bournemouth University](#)

Leading the National Centre of Computer Animation, an [internationally leading](#) centre for research and teaching in Computer Animation.

### **Principal Academic (Senior Lecturer) 2011–2019**

[NCCA, Bournemouth University](#)

Teaching and research in multiple topics, including Real-time Rendering, Software Development, Parallel Programming, Simulation and Computer Graphics.

### **Research Fellow 2008–2011**

[NCCA, Bournemouth University](#)

Leading software development and asset creation in a multi-disciplinary team for a set of VR experiment to investigate the factors influencing the likelihood of a bystander intervening in a violent emergency.

### **Software Engineer 2001–2003**

**EM Software and Systems (now [Altair](#))**

Designing, implementing, testing and maintaining core CAD, Visualisation and antenna design and placement tools.

## EDUCATION

### **PhD Computer Science 2003–2008**

*University of Cambridge* [Animation manifolds for representing topological alteration](#)

### **MSc Computer Science 1999–2001**

*University of Cape Town* [Quality control tools for interactive rendering of 3d triangle meshes](#)

### **BSc Computer Science 1995–1997**

*University of the Witwatersrand*

## ★ SELECTED GRANTS

### Towards Zero Carbon Production (£43k) 2022

#### XR Stories

Towards Zero Carbon Production: A systems dynamics model to inform and monitor energy policy and planning scenarios in Virtual Production (PI).

### UK-China Networking Grant (£100k) 2022–2023

#### Arts and Humanities Research Council

Understanding the Future of UK-China Research and Innovation Collaboration in Cloud based Film Production (Co-I).

### BU Strategic Investment (£360k) 2021–2024

#### Bournemouth University

Towards Remote Production: Multi-Disciplinary Innovation in Virtual Production to widen access, enhance sustainability and enable new applications (PI).

### World Class Laboratories Fund (£61k) 2020

#### UK Research and Innovation

Production facilities upgrade to support Virtual Production (PI).

## 👍 REFEREES

Available on request.

## 📖 SELECTED PUBLICATIONS

- [1] R. Kosk, R. Southern, L. You, S. Bian, W. Kokke, and G. Maguire. Deep spectral meshes: Multi-frequency facial mesh processing with graph neural networks. *Electronics*, 13(4):720, 2024. <https://doi.org/10.3390/electronics13040720>.
- [2] A. Rovira, R. Southern, D. Swapp, C. Campbell, J. J. Zhang, M. Levine, and M. Slater. Bystander affiliation influences intervention behaviour – a virtual reality study. *SAGE Open*, 2022. <https://journals.sagepub.com/doi/10.1177/21582440211040076>.
- [3] M. Jiang, R. Southern, and J. J. Zhang. Energy-based dissolution simulation using SPH sampling. *Computer Animation and Virtual Worlds*, 29(2):e1798, 2018. <https://onlinelibrary.wiley.com/doi/abs/10.1002/cav.1798>.
- [4] R. Jones and R. Southern. Physically-based droplet interaction. In *Proceedings of the ACM SIGGRAPH / Eurographics Symposium on Computer Animation*, SCA '17, pages 5:1–5:10, New York, NY, USA, 2017. ACM. <http://doi.acm.org/10.1145/3099564.3099573>.
- [5] M. Jiang, Y. Zhou, R. Wang, R. Southern, and J. J. Zhang. Blue noise sampling using an SPH-based method. *ACM Trans. Graph.*, 34(6):211:1–211:11, Oct. 2015. <http://doi.acm.org/10.1145/2816795.2818102>.
- [6] X. Yang, J. Chang, R. Southern, and J. J. Zhang. Automatic cage construction for re-targeted muscle fitting. *The Visual Computer*, 29(5):369–380, 2013. <http://dx.doi.org/10.1007/s00371-012-0739-3>.
- [7] F. Liu, R. Southern, S. Guo, X. Yang, and J. Zhang. Motion adaptation with motor invariant theory. *Cybernetics, IEEE Transactions on*, 43(3):1131–1145, 2013. <https://doi.org/10.1109/TSMCB.2012.2224920>.
- [8] R. Southern and J. Zhang. Motion-sensitive anchor identification of least-squares meshes from examples. *Visualization and Computer Graphics, IEEE Transactions on*, 17(6):850–856, June 2011. <https://doi.org/10.1109/TVCG.2010.95>.
- [9] X. Yang, R. Southern, and J. J. Zhang. Fast simulation of skin sliding. *Computer Animation and Virtual Worlds (Proceedings of CASA 2009)*, 20(2–3):333–342, 2009. <http://www3.interscience.wiley.com/journal/122418041/abstract>.
- [10] R. Southern and J. Gain. Creation and control of real-time continuous level of detail on programmable graphics hardware. *Computer Graphics Forum*, 22(1):35–48, 2003. <http://www3.interscience.wiley.com/journal/118878788/abstract>.