

# Richard Southern | PhD

[nccastaff.bournemouth.ac.uk/rsouthern/](https://nccastaff.bournemouth.ac.uk/rsouthern/) • [in richard-southern-70289b12](#)  
[rsouthern](#)

## Personal Information

---

### Work Experience

---

<b>Head of Department, National Centre for Computer Animation</b> <i>Bournemouth University, UK</i>	<b>2019–now</b> <i>[external link]</i>
<b>Senior Academic and Lecturer, Computer Animation</b> <i>Bournemouth University, UK</i>	<b>2011–2019</b> <i>[external link]</i>
<b>Research Fellow, The Bystander Project</b> <i>Bournemouth University, UK</i>	<b>2008–2011</b> <i>[external link]</i>
<b>Software Engineer</b> <i>Electromagnetic Software and Systems, South Africa</i>	<b>2001–2003</b> <i>[external link]</i>

### Education and Qualifications

---

<b>Postgraduate Certification in Education Practice</b> <i>Higher Education Academy, Bournemouth University, UK</i>	<b>2013</b>
<b>PhD Computer Science</b> <i>University of Cambridge, UK</i>	<b>2003–2008</b>
<b>MSc Computer Science</b> <i>University of Cape Town, SA</i>	<b>1999–2001</b>
<b>BSc Computer Science (Hons)</b> <i>University of Cape Town, SA</i>	<b>1998</b>
<b>BSc Computer Science</b> <i>University of the Witwatersrand, SA</i>	<b>1995–1997</b>

### Referees

---

Available on request.

## Research

---

### Grants and Awards

---

<b>Multimodal Emotion Expressions for Virtual Avatars</b> <i>CDE Industrial Contribution Fund, £35k</i>	<b>2020-2022</b>
<b>UK–China Creative Industries Partnership Development Workshop</b> <i>AHRC, £2.5k, completed</i>	<b>2018</b>
<b>Griffon Hoverwork Training Simulator Project (PI)</b> <i>Privately funded, £7k, completed</i>	<b>2018</b>
<b>NVIDIA Best Paper Award</b> <i>GRAPP / VISIGRAPP, £2k prize</i>	<b>2015</b>

<b>Matched funded PhD Studentship</b> <i>BU / Center for Digital Entertainment, £50k, awarded</i>	2014–2018
<b>Fully funded PhD Studentship</b> <i>Center for Digital Entertainment, £50k, awarded</i>	2012–2016
<b>Fully funded PhD Studentship</b> <i>EPSRC Research Grant, £60k, awarded</i>	2003–2007
<b>Partial PhD Bursary</b> <i>Cambridge Trust Bursary, £6k, awarded</i>	2003–2007

### Postgraduate Supervision

<b>Neerav Nagda (EngD, FT)</b> <i>CDE/Absolute Post funded</i>	2018–now <i>ongoing</i>
<b>Robert Kosk (EngD, FT)</b> <i>CDE/Humain Ltd funded</i>	2018–now <i>ongoing</i>
<b>Declan Russell (MRes, FT)</b> <i>CDE funded</i>	2016–2018 <i>completed</i>
<b>Richard Jones (EngD, FT)</b> <i>CDE/DNEG funded</i>	2013–2018 <i>completed</i>
<b>Min Jiang (PhD, FT)</b> <i>Chinese State funded</i>	2012–2016 <i>completed</i>

### Selected Invited Talks

<b>“On the use of Particle-in-Cell methods in Visual Effects” (Keynote)</b> <i>2019 SPHERIC Workshop, Bristol UK</i>	2019 <i>[external link]</i>
<b>“On the use of Particle-in-Cell methods in Visual Effects”</b> <i>SPH Special Interest Group, Bristol UK</i>	2018 <i>[external link]</i>
<b>“SPH Sampling and its applications in Computer Graphics”</b> <i>SPH Special Interest Group, Manchester UK</i>	2018 <i>[external link]</i>
<b>“Modelling Adaptive Human Locomotion”</b> <i>Bournemouth Natural Science Society, Bournemouth, UK</i>	2017 <i>[external link]</i>
<b>“The Art of the Rebuttal”</b> <i>Centre for Digital Entertainment, Bournemouth, UK</i>	2015 <i>[external link]</i>
<b>“A Survival Guide to the Transfer Viva”</b> <i>Centre for Digital Entertainment, Bournemouth, UK</i>	2014
<b>“Motion Adaptation in Bipedal Locomotion”</b> <i>Computer Science, University College London, London, UK</i>	2014
<b>“Virtual Reality in Behavioural Psychology”</b> <i>Festival of Learning, Bournemouth, UK</i>	2013 <i>[external link]</i>

## Academic Citizenship

---

### Leadership Roles

---

<b>Head of Department</b> <i>National Centre for Computer Animation</i>	<b>2019–now</b> <i>[external link]</i>
<b>Head of Research</b> <i>National Centre for Computer Animation</i>	<b>2017–2019</b> <i>[external link]</i>
<b>Head of Education</b> <i>National Centre for Computer Animation</i>	<b>2015–2017</b> <i>[external link]</i>
<b>Impact Champion</b> <i>Unit of Assessment 32: Art and Design</i>	<b>2014–2019</b>
<b>Undergraduate Framework Leader</b> <i>Computer Animation</i>	<b>2014–2015</b>
<b>Programme Leader</b> <i>BSc Software Development for Animation, Games and Effects</i>	<b>2012–2014</b>
<b>Impact and Environment Narrative Principle Author</b> <i>Unit of Assessment 34: Art and Design</i>	<b>2012–2014</b> <i>[external link]</i>
<b>Unit Leader</b> <i>Major Project and Report, Masterclasses, Principles of Rendering...</i>	<b>2011–now</b>

### Selected Committee Membership

---

<b>Faculty Executive Committee</b> <i>Faculty of Media and Communication</i>	<b>2019–now</b>
<b>Faculty Research and Knowledge Exchange Committee</b> <i>Faculty of Media and Communication</i>	<b>2017–now</b>
<b>University Senate</b> <i>Bournemouth University</i>	<b>2016–2018</b>
<b>Faculty Education and Student Experience Committee</b> <i>Faculty of Media and Communication</i>	<b>2015–now</b>

## Education

---

### Curriculum Validation and Accreditation

---

<b>Programme Development: MSc Artificial Intelligence for Media</b> <i>validated</i>	<b>2020</b> <i>[external link]</i>
<b>Programme Development: BSc Virtual and Augmented Reality</b> <i>validated</i>	<b>2020</b> <i>[external link]</i>
<b>Programme Development: BA Computer Animation Technical Arts</b> <i>validated</i>	<b>2017</b> <i>[external link]</i>
<b>Programme Development: BA Computer Animation Art and Design</b> <i>validated</i>	<b>2017</b> <i>[external link]</i>
<b>Programme Development: BA Visual Effects</b> <i>validated</i>	<b>2017</b> <i>[external link]</i>

<b>Programme Development: BA Digital Creative Industries</b> <i>validated</i>	2017 <a href="#">[external link]</a>
<b>Creative Skillset Accreditation: BA Computer Visualisation and Animation</b> <i>accredited</i>	2017 <a href="#">[external link]</a>
<b>Creative Skillset Accreditation: MA Digital Effects</b> <i>accredited</i>	2017 <a href="#">[external link]</a>
<b>Development Lead: BSc Software Development for Animation, Games and Effects</b> <i>validated</i>	2014

## Teaching

<b>Advanced Programming</b> <i>Level 6, 10 Students, 20 credits</i>	2017–now
<b>Principles of Rendering</b> <i>Level 5, 30 Students, 20 credits</i>	2016–now
<b>Major Project and Report</b> <i>Level 6, 100 Students, 40 credits</i>	2014–now
<b>Masterclasses in Computer Graphics Techniques</b> <i>Level 6, 100 Students, 20 credits</i>	2014–2016
<b>Advanced Graphics Software Development Techniques</b> <i>Level 6, 10 Students, 20 credits</i>	2014–2017
<b>Principles and Practice of Programming</b> <i>Level 4, 15 Students, 20 credits</i>	2013–2017
<b>Object Oriented Programming for Graphics</b> <i>Level 5, 15 Students, 20 credits</i>	2013–2016
<b>Fundamentals of Computer Science</b> <i>Level 4, 15 Students, 20 credits</i>	2012–2014

## Selected Undergraduate Project Supervision

<b>Finish Line</b> <i>Ana Greengrass</i>	2018-19 <a href="#">[external link]</a>
<b>Spagettify (BlueZoo Award Winner 2018)</b> <i>Zoe Geddes, Adeola Sokunbi, Phuong Anh Nguyen and Mark Spokes</i>	2017-2018 <a href="#">[external link]</a>
<b>Murphy's Law</b> <i>Chun You Sim, Ewa Zych, Michael Cauchi and Oleksiy Popov</i>	2016-2017 <a href="#">[external link]</a>
<b>Pangur Bán</b> <i>Daniel de Carvalho, Kristine Olgaard and Lucy Devlin</i>	2016-2017 <a href="#">[external link]</a>
<b>2020 Visionaries (broadcast on CNNi)</b> <i>Team JAMI</i>	2016 <a href="#">[external link]</a>
<b>Portrait of Care</b> <i>Liz Peach</i>	2015-2016 <a href="#">[external link]</a>
<b>Bill Block (BlueZoo Award Winner 2015)</b> <i>Izzy Burton, Stephen Edgerton, Arianna Bragaglia and Arran Baker</i>	2014-2015 <a href="#">[external link]</a>

## Professional Practice

---

### Professional Activities

---

<b>Project Lead</b> <i>Griffon Hoverwork Training Simulator Project</i>	<b>2018</b> <a href="#">[external link]</a>
<b>Academic Mentor</b> <i>Augmentor Programme, London, UK</i>	<b>2017</b> <a href="#">[external link]</a>
<b>Panel Chair</b> <i>VFX Bootcamp, Moving Picture Company, London, UK</i>	<b>2015</b> <a href="#">[external link]</a>
<b>Panel Member</b> <i>BFX Virtual Reality Panel, Bournemouth, UK</i>	<b>2015</b> <a href="#">[external link]</a>
<b>Programming Short Course (organised and delivered)</b> <i>Double Negative VFX, London, UK</i>	<b>2014–2015</b> <a href="#">[external link]</a>
<b>Programme Committee Member</b> <i>International Conference on Virtual Reality Systems and Technology Conference, Edinburgh, UK</i>	<b>2014</b>
<b>Programme Committee Member</b> <i>International Conference on Virtual Worlds and Games for Serious Applications, Bournemouth, UK</i>	<b>2013</b>
<b>Organizing committee Member</b> <i>Computer Graphics International, Bournemouth, UK</i>	<b>2012</b>

### Professional Affiliations

---

<b>Junior College Member</b> <i>Engineering and Physical Sciences Research Council</i>	<b>2016–now</b> <a href="#">[external link]</a>
<b>Member</b> <i>UK Fluid Networks: SPH Special Interest Group</i>	<b>2016–now</b> <a href="#">[external link]</a>
<b>Member and Supervisor</b> <i>Centre for Digital Entertainment</i>	<b>2013–now</b> <a href="#">[external link]</a>
<b>Fellow</b> <i>Higher Education Academy</i>	<b>2013–now</b> <a href="#">[external link]</a>

## Selected Publications

---

- [1] Mel Slater, Aitor Rovira, Richard Southern, David Swapp, Jian J. Zhang, Claire Campbell, and Mark Levine. Bystander responses to a violent incident in an immersive virtual environment. *PLoS ONE*, 8(1):e52766, 01 2013. <http://dx.doi.org/10.1371/journal.pone.0052766>.
- [2] Richard Jones and Richard 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>.
- [3] Min Jiang, Richard Southern, and Jian 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] Min Jiang, Yahan Zhou, Rui Wang, Richard Southern, and Jian Jun Zhang. Blue noise sampling using an sph-based method. *ACM Trans. Graph.*, 34(6):211:1–211:11, October 2015. <http://doi.acm.org/10.1145/2816795.2818102>.
- [5] Min Jiang, Richard Southern, and Jian Jun Zhang. A particle-based dissolution model using chemical collision energy. In *Proceedings of the 10th International Conference on Computer Graphics Theory and Applications*, pages 285–293, 2015.
- [6] Shihui Guo, Richard Southern, Jian Chang, David Greer, and Jian Jun Zhang. Adaptive motion synthesis for virtual characters: a survey. *The Visual Computer*, 31(5):497–512, 2015. <http://dx.doi.org/10.1007/s00371-014-0943-4>.
- [7] A. Rovira, D. Swapp, R. Southern, J.J. Zhang, and M. Slater. The impact of enhanced projector display on the responses of people to a violent scenario in immersive virtual reality. In *Virtual Reality (VR), 2013 IEEE*, pages 15–18, March 2013. <http://dx.doi.org/10.1109/VR.2013.6549350>.
- [8] Fangde Liu, R. Southern, Shihui Guo, Xiaosong Yang, and J.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>.
- [9] Xiaosong Yang, Jian Chang, Richard Southern, and Jian J. Zhang. Automatic cage construction for retargeted muscle fitting. *The Visual Computer*, 29(5):369–380, 2013. <http://dx.doi.org/10.1007/s00371-012-0739-3>.
- [10] R. Southern and J.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>.
- [11] Lihua You, Richard Southern, and Jian Jun Zhang. Adaptive physics-inspired facial animation. *Lecture Notes in Computer Science (proceedings of Motion in games 2009)*, 1(5884):207–218, 2009. <http://www.springerlink.com/content/55q3n377075t26g3/>.
- [12] Xiaosong Yang, Richard Southern, and Jian Jun 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>.
- [13] Richard Southern and James 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>.
- [14] Richard Southern, Patrick Marais, and Edwin Blake. Generic memoryless polygonal simplification. In *ACM Afrigraph*, pages 7–15, 2001. <http://portal.acm.org/citation.cfm?id=513867.513871>.

- [15] Richard Southern, Simon Perkins, Barry Steyn, Alan Muller, Patrick Marais, and Edwin Blake. A stateless client for progressive view-dependent transmission. In *ACM Web3D*, pages 43–49, 2001. <http://portal.acm.org/citation.cfm?id=363375>.
- [16] Richard Southern, Edwin Blake, and Patrick Marais. GEMS: a generic implementation for memoryless polygonal simplification. In *Proceedings of the 3rd South African Telecommunications, Networks and Applications Conference (SATNAC)*, 2000.
- [17] Sonia Behrman, Richard Southern, Aisling Vasey, and Daniel Ziskind. Spatio-temporal access in persistent java. In *Advances in Persistent Object Systems*, pages 45–52, 1998.
- [18] Richard Southern. *Animation manifolds for representing topological alteration*. PhD thesis, University of Cambridge, 2008. <http://www.cl.cam.ac.uk/techreports/UCAM-CL-TR-723.pdf>.
- [19] R. Southern and N. A. Dodgson. A smooth manifold based construction of approximating lofted surfaces. Technical Report UCAM-CL-TR-699, Computer Laboratory, University of Cambridge, October 2007. <http://www.cl.cam.ac.uk/techreports/UCAM-CL-TR-699.pdf>.
- [20] N. A. Dodgson, M. A. Sabin, and R. Southern. Preconditions on geometrically sensitive subdivision schemes. Technical Report UCAM-CL-TR-691, Computer Laboratory, University of Cambridge, August 2007. <http://www.cl.cam.ac.uk/techreports/UCAM-CL-TR-691.pdf>.
- [21] R. Southern and N. A. Dodgson. A smooth manifold based construction of approximating lofted surfaces. Poster Presentation at Curves and Surfaces, 2006.
- [22] Richard Southern, Edwin Blake, and Patrick Marais. Evaluation of memoryless simplification. Technical Report CS01-18-00, University of Cape Town, 2001. <http://people.cs.uct.ac.za/~edwin/MyBib/2001-memoryless.pdf>.
- [23] Richard Southern, Edwin Blake, and Patrick Marais. Quality control tools for interactive rendering of 3d triangle meshes (msc thesis). Technical Report CS01-27-00, University of Cape Town, 2000. <http://people.cs.uct.ac.za/~edwin/MyBib/2002-southern-thesis.pdf>.
- [24] Richard Southern, Edwin Blake, and Patrick Marais. Wavelets for multiresolution analysis. Technical Report CS00-11-00, University of Cape Town, 2000. <http://pubs.cs.uct.ac.za/archive/00000286/01/CS00-11-00.pdf>.