Flip Phillips

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Current position

Professor, Skidmore College, Saratoga Springs, NY

Areas of specialization

Vision & Haptics; Perception & Action; Computational Modeling.

Appointments held

2010— *Professor*, Skidmore College
2016–2017 *Visiting Professor*, Justus Liebig Universität Gießen, Psychologie und Sportwissenschaft
2015–2016 *Visiting Professor*, Rochester Institute of Technology, Imaging Science
2009–2015 *Visiting Scientist*, The Ohio State University, Psychology
2009–2010 *Chief Scientist*, investio.com
2007–2011 *Director of the Neuroscience Program*, Skidmore College
2005–2007 *Visiting Scientist*, The Ohio State University, Institute for Collaborative Innovation
2004–2010 *Associate Professor*, Skidmore College, Psychology & Neuroscience
2002 *Visiting Scientist*, The Ohio State University, Psychology
2001 *Visiting Scientist*, New York University, Psychology & Neural Systems
1998–2004 *Assistant Professor*, Skidmore College, Psychology & Neuroscience
1997–1998 *Research Scientist*, The Ohio State University, Psychology
1993–1997 *Research Assistant*, The Ohio State University, Psychology
1987–1992 *Animation Scientist*, Pixar Animation Studios
1986–1987 *Lecturer*, The Ohio State University, Computer Graphics Research Group
1985–1987 *Research Assistant*, The Ohio State University, Computer Graphics Research Group
1983–1984 *Laboratory Instructor*, The Ohio State University, Engineering Graphics

Education

1997 PhD in Psychology — Cognition & Perception, The Ohio State University

1994 MA in Psychology — Cognition & Perception, The Ohio State University

1986 BFA in Computer Art, The Ohio State University

1982 Creative Music Studios, Woodstock NY

Publications

Journal articles

2016 Enhancing research with Plenary Labs, by P Sinha, P Bex, M Kjelgaard & F Phillips. *Science and Public Policy*, vol. 44, num. 3, pp, 434–439. doi:10.1093/scipol/scw051

Perceiving Object Shape from Specular Highlight Deformation, Boundary Contour Deformation, and Active Haptic Manipulation, by JF Norman, F Phillips, JR Cheeseman, KE Thomason, C Ronning, K Behari, K Kleinman, AB Calloway & D Lamiranee. *PLoS ONE*, vol. 11, num. 2, e0149058. doi:10.1371/journal.pone.0149058.

Binocular eye tracking calibration during a virtual ball catching task using head mounted display, by K Binaee, G Diaz, J Pelz & F Phillips. *Proceedings of the ACM Symposium on Applied Perception — SAP '16*. doi:10.1145/2931002.2931020

2015 Magically deceptive biological motion—the French Drop Sleight, by F Phillips, MB Natter & EJL Egan. *Frontiers in Psychology*, vol 6. doi:10.3389/fpsyg.2015.00371

2014 Perception of Tactile Graphics: Embossings Versus Cutouts, by A Kalia, P Sinha, L Merabet, F Phillips, L Yazzolino, S Verma & R Hopkins. *Multisensory Research*, vol. 27, num. 2, pp. 111–-125. doi:10.1163/22134808-00002450

Is the Perception of 3D Shape from Shading Based on Assumed Reflectance and Illumination? by JT Todd, EJL Egan & F Phillips. *i-Perception*, 5(6), 497–514. doi:doi.org/10.1068/i0645

2012 Solid shape discrimination from vision and haptics: Natural objects *(Capsicum annuum)* and Gibson's "feelies", by JF Norman, F Phillips, J Holmin, A Beers, A Boswell & H Norman. *Experimental Brain Research*, 222(3), 321–332. doi:10.1007/s00221-012-3220-7

Anticipation from biological motion: The goalkeeper problem, by GJ Diaz, B Fajen & F Phillips. *Journal of experimental psychology: Human perception and performance*, 38(4), 848–864. doi:10.1037/a0026962

2011 The perception of 3D shape from planar cut contours, by EJL Egan, JT Todd & F Phillips. *Journal of Vision*, vol. 11, num. 12. doi:10.1167/11.12.15

Fechner, information, and shape perception, by J Lappin, JF Norman & F Phillips. *Attention, Perception & Psychophysics*, vol. 73, num. 8, pp 2353–78. doi:10.3758/s13414-011-0197-4

Texture discrimination based on global feature alignments, by F Phillips & J Todd. *Journal of Vision*, vol. 10 num. 6 art. 6. doi:10.1167/10.6.6

2010 Fechner's aesthetics revisited, by F Phillips, JF Norman & AM Beers. *Seeing & Perceiving*, vol. 23 pp 263–271.

Does monocular visual space have planes?, by J Koenderink, et al. *Acta Psychologica*, vol. 134, num. 1, pp. 40–47. doi:10.1016/j.actpsy.2009.12.002

2009 Perceptual equivalence between vision and touch is complexity dependent, by F Phillips, EJL Egan & BN Perry. *Acta Psychologica*, vol. 132 pp. 259–266.

Intercepting moving targets: A little foresight helps a lot, by G Diaz, F Phillips & B Fajen. *Experimental Brain Research*, vol. 195 pp 345–360.

The perception of 3D shape from shadows cast onto curved surfaces, by JF Norman, Y Lee, F Phillips, HF Norman, LR Jennings & TR McBride. *Acta Psychologica*, vol. 131 pp. 1–11.

Distortion of posterior visual space, by F Phillips & MG Voshell. *Perception*, vol. 38 pp. 1045–1052.

Crossmodal information for visual and haptic discrimination, by F Phillips & EJL Egan. *SPIE Human Vision and Electronic Imaging*, vol. 14 pp. 7240–70.

2006 A novel metric for evaluating human-robot navigation performance, by F Phillips & MG Voshell. *Human Factors of Uninhabited Military Vehicles as Force Multipliers*, RTO-MP-HFM-135.

2005 Overcoming the keyhole in human-robot coordination: Simulation and evaluation, by MG Voshell, DD Woods & F Phillips. *Proceedings of the Human Factors and Ergonomics Society 49th Annual Meeting*, 26–30 September, Orlando FL.

2004 Creating noisy stimuli, by F Phillips. *Perception*, vol. 33, pp. 837–854.

Effects of three-dimensional complexity on the perception of two-dimensional depictions of objects, by F Phillips, CH Thompson & MG Voshell. *Perception*, vol. 33, pp. 21–33.

2003 Perceptual representation of visible surfaces, by F Phillips, JT Todd, JJ Koenderink & AML Kappers. *Perception & Psychophysics*, vol. 65, pp. 747–762.

2001 Information concentration along the boundary contours of naturally shaped solid objects, by JF Norman, F Phillips & HE Ross. *Perception*, vol. 30, pp. 1285–1294.

Limits, uncertainty, and randomness, by F Phillips. *The Mathematica Journal*, vol. 8(2).

The role of 2-D and 3-D task performance in the design and use of visual displays, by JS Tittle, DD Woods, A Roesler, M Howard & F Phillips. *Proceedings of the Human Factors Society*, pp. 331–335.

2000 Quantum computation, by F Phillips. *The Mathematica Journal*, vol. 8.

Simulating society — Sim City, by F Phillips. *The Mathematica Journal*, vol. 7 pp. 427–433.

1999 Artlandia, by F Phillips. *The Mathematica Journal*, vol. 7 pp. 230–236.

Feeling shape, by F Phillips. *The Mathematica Journal*, vol. 7 pp. 93–94.

1998 The perception of surface curvature from optical motion, by VJ Perotti, JT Todd, JS Lappin & F Phillips. *Perception & Psychophysics*, vol. 60 pp. 377–388.

1997 *Geometric Structure, Frames of Reference, and Their Implication in the Localization of Features on Smoothly Curved Surfaces,* by F Phillips. Ph.D. Dissertation, The Ohio State University.

Perceptual localization of features on smoothly curved surfaces, by F Phillips, JT Todd, JJ Koenderink & AML Kappers. *Journal of Experimental Psychology: Human Perception and Performance*, vol. 23 pp. 1481–1492.

The perception of shape and curvedness from multiple sources of information, by JS Tittle, JF Norman, VJ Perotti & F Phillips. *Perception*, vol. 26, pp. 147–166.

1996 Perception of local three-dimensional shape, by F Phillips & JT Todd. *Journal of Experimental Psychology: Human Perception and Performance*, vol. 22 no. 4 pp. 930–944.

Surface range and attitude probing in stereoscopically presented dynamic scenes, by JJ Koenderink, AML Kappers, JT Todd, JF Norman & F Phillips. *Journal of Experimental Psychology: Human Perception and Performance*, vol. 22 no. 4 pp. 869–878.

1995 The perception of surface orientation from multiple sources of optical information, by JF Norman, JT Todd & F Phillips. *Perception & Psychophysics*, vol. 57 no. 5 pp. 629–636.

1989 The animation environment at Studio Pixar, by F Phillips. *Proceedings of Computer Graphics '89 Conference*, pp. 243–255.

1988 Supercomputer medical imaging, by F Phillips. *Convex White Paper Series on Supercomputing*, pp. 1–7.

1987 Combinational imaging: Magnetic resonance imaging and EEG displayed simultaneously, by MW Torello, F Phillips, W Hunter & CA Csuri. *Journal of Clinical Neurophysiology*, vol. 4 no. 3 pp. 274–275.

Books & book chapters

2011 Spatial perception and action, in *Handbook of Spatial Cognition*, by B Fajen & F Phillips. American Psychological Association, in press.

2006 *Foundations of Cyclopean Perception*, by B Julesz, with T Papathomas & F Phillips. MIT Press, ISBN 0262101130.

Unpublished manuscripts & technical reports

5 technical reports.

Conference Presentations

50+ conference presentations.

Book reviews and magazine articles

12+ reviews.

Invited talks

2017 New York University Abu Dhabi, *Eyetracking Shape*, Abu Dhabi United Arab Emirates.

Vision Sciences, *The Veiled Virgin Effect: Causal 3D Shape*, St. Pete Beach FL.

2016 Justus Liebig Universität, *Sensory Compensation in the Blind*, Gießen Germany.

Justus Liebig Universität Psychologie und Sportwissenschaft, *Visual and Haptic Pereption of 3D Shape*, Gießen Germany.

Rochester Institute of Techology MAGIC Center converence on VR/AR, *Travels in the Ucanny Valley*, Rochester NY.

The Saratoga Foundation, *Art, Perception and Neuroscience*, Saratoga Springs NY.

PRISM6, *Eye Tracking Shape*, Rauischholzhausen Castle Germany.

2015 Rochester Institute of Technology Distinguished Scholar, *Molyneux's Empirical Problem*, Rochester NY.

SIGGRAPH Rochester, *Pixar: The Early Years*, Rochester NY.

Rochester Institute of Techology MAGIC Center converence on VR/AR, *Travels in the Ucanny Valley*, Rochester NY.

Skidmore Project VIS, *Creating Scientific Posters*, Saratoga Springs NY.

Rensellear Institute of Technology Cognitive Science, *Visual and Haptic Shape*, Troy NY.

Tactile Research Group, *Molyneux's Empirical Problem*, Chicago IL.

Massachusetts Institute of Technology BCS, *Sensory Compensation in the Blind*, Cambridge MA.

Charles River Associates, *Perception of 3D Shape*, Cambridge MA.

Northern Arizona University, *Magic, Shape, Things and Stuff*, Flagstaff AZ.

2014 SIGGRAPH Expressive, *What can art teach us about perception?* Vancouver B.C.

Rochester Institute of Technology Center for Imaging Science Series, *Visual and Haptic Perception of 3D Shape*, Rochester NY.

2013 EMPAC Artists and Scientists series, *Deconstructing Perception*, Troy NY.

2013 TEDxSkidmore, *I'm still not an architect…*, Saratoga Springs NY.

Neuromagic: Conference on the Neuroscience of Magic, *Deceptive Biological Motion*, Vigo Spain.

2012 Art Beyond Sight & The Metropolitan Museum of Art, *Multimodal Approaches to Learning International Conference*, New York NY.

Skidmore College, SKIDTalks, *Three Things I Believe*, Saratoga Springs NY.

Skidmore College, *The Pursuit of Novel Sound*, Saratoga Springs NY.

Skidmore College, *Your Brain is not a Computer*, Saratoga Springs NY.

2011

Skidmore College, *Gawking and Fondling — The Resolution of Arts and Science*, Saratoga Springs NY.

2010 Union College, *Information for Visual, Haptic, and Crossmodal Perception*, Schenectady NY.

Skidmore College, The John Ramsey Lecture, *How Many Cultures?*, Saratoga Springs NY.

2009 MIT, *Information for Visual, Haptic, and Crossmodal Perception*, Cambridge MA.

2008 Vanderbilt University, *Information, Symmetry & Vision*, w/ J Lappin, Nashville TN.

Rutgers University, *Sculpting and Drawing: What They Tell Us About Our Mental Representation of 3D Shape*, New Brunswick NJ.

2007

2006 The Ohio State University, *Storytelling & Collaboration*, Columbus OH.

2005 Rensselaer Polytechnic Institute, *Seeing Shape* Troy NY.

Old Dominion Univertisy, *Perception and Representation*, Norfolk VA.

2001–2004 National Science Foundation Chautauqua Short Courses, *Mathematical Modeling with Mathematica*, Memphis TN.

2002 The Ohio State University, *Contributions of 2-D Information to 3-D Perception*, Columbus OH.

2001 Rutgers University, *Size & Shape, the Effect of 2-D Information to 3-D Perception*, New Brunswick NJ.

ATI, Inc., *Perceptual Issues in Computer Graphics*, Marlboro MA.

1997 Central Ohio Psychological Association, *Genetic Aesthetics: Breeding Better Models*, Columbus OH.

1993 Human Factors Society, *Interfaces for Traditional & Nontraditional Execution of the Arts*, Columbus OH.

1992 Advanced Computing Center for the Arts & Design, *The Animation Environment at Studio Pixar*, Columbus OH.

1991 USENIX Annual Conference, *Graphics as Systems Programming*, Keynote Speech †, Dallas TX.

1990 ACM — SIGGRAPH, *Using of RenderMan to Generate Procedural Textures*, Dallas TX.

University of San Francisco, *Computer Animation: Man Meets Machine in a Friendly Exchange of Ideas*, w/ P Docter, San Francisco CA.

1989–1991 Stanford University Undergraduate Excellence Series, *Computer Animation at Pixar*, Palo Alto CA.

1988 Association of Medical Illustrators, *Computer Graphics & Medical Illustration*, San Diego CA.

Television & media appearances

2012 National Geographic, *Brain Games*.

Grants & awards

2017 *Travels in the Uncanny Valley*, by F Phillips & L Noejovich. Skidmore Collaborative Research Grant. Award: approx. $5,000 materials & support.

2015-2016 *What Can Art Tell Us About the Perception of 3D Shape?* Fulbright Scholar, Justus Liebig Universität Gießen Germany. Award: approx. $50,000

2012 *The Pursuit of Novel Sound*, by Brendan Gaffney & Flip Phillips. Treuhaft Fund for Art and Technology. Award: approx. $7,500 materials.

2011 *What Can Drawing and Sculpting Tell Us About the Perception of 3D Shape?*, by D Pinnolis, K Eckman & Flip Phillips. Skidmore Collaborative Research Grant. Award: approx. $5,000 materials & support.

2008 *The Traveling Salesman Problem*, by O Layton & Flip Phillips. Skidmore Collaborative Research Grant. Award: approx. $5,000 materials & support.

Spherical Harmonic Decomposition by Kübra Kömek, Flip Phillips & Josh Lesperance. Skidmore Collaborative Research Grant. Award: approx. $5,000 materials & support.

2007 *Scanning Three-Dimensional Sculptures,* by Eric Egan & Flip Phillips. Treuhaft Fund for Art and Technology. Award: approx. $7,500 materials.

2006–2008 *Converging Perspectives on Data,* by F Phillips. Collaborative program sponsored by the National Security Agency, hosted at The Ohio State University. Support included three Skidmore undergraduates. Award: $80,000.

2003–2004 *Computational Neuroscience,* by F Phillips. A module of the Keck Undergraduate Computational Science Educational Consortium project. Award: $11,000.

2003 *Control,* by F Phillips & K DeSimone. Skidmore Summer Collaborative Grant. Award: approx. $5,000 materials & support.

2001 *Further Investigations of Scale, Depth, & Texture,* by F Phillips & M Voshell. Skidmore Summer Collaborative Grant. Award: approx. $5,000 materials & support.

1999 *Perception of Textured Surfaces,* by F Phillips & C Thompson. Skidmore Summer Collaborative Grant. Award: approx. $5,000 materials & support.

1999 *Scale, Depth, & Texture: Perceptual* and *Artistic Considerations,* by F Phillips & C Thompson. Keck Foundation. Award: approx. $3,000 materials & travel support.

1997 *Perception of Texture and Shape,* by F Phillips, JT Todd, W Carlson, & S May. Cognitive Science Summer Research Fellowship. Award: approx. $7,000 support.

Creative work, design competitions & awards

20+ exhibitions of art, animation and sculpture. These include the Academy Award winning short film *Tin Toy* and several Clio award winning commercials.

Teaching

Thesis supervision

Supervised 30+ undergraduate and graduate thesis students at Ohio State, Skidmore College, and RPI.

Classes

Classes include computational neuroscience, perception, statistics, introduction to cognitive science, "Designing a mind", psychological aesthetics, and other introduction / foundation courses in psychology and neuroscience.

Service to the profession

Reviewer for 20+ journals and agencies. Editor emeritus of *The Mathematica Journal*.

Computer software

Author of 15+ commercial and open-source software packages for statistical and experimental analysis, image processing, and multimedia production.