Thanassis Rikakis
Dean, Iovine Young Academy for
Arts, Technology and the Business of Innovation
University of Southern California
3780 Watt Way
Los Angeles, CA 90089
rikakis@usc.edu, 213-821-5067
https://www.thanassisrikakis.com

Dr. Rikakis is a transdisciplinary researcher, teacher, and administrator. He serves as dean of the USC Iovine and Young Academy for Arts, Technology and the Business of Innovation. He joined the Academy from Virginia Tech, where he was professor of Bioengineering and founding director of the Calhoun Discovery Program (CDP); a program focused on adaptive and inclusive lifelong learning. He has served as provost at Virginia Tech, vice provost at Carnegie Mellon University, school founding director at Arizona State University, and Center associate director at Columbia University. He initiated ongoing transdisciplinary education and research initiatives in all of these positions. He has led gift efforts from philanthropy and industry totaling more than $75,000,000. He has been PI or co-PI in research grants from NSF, NIH, NEA and industry totaling over $16,000,000. He has authored peer reviewed publications spanning computing, engineering, health, education, design and the arts. He has composed original music compositions performed internationally.

Academic Administration Positions

- *Dean, Iovine and Young Academy, University of Southern California (August 2021 – current)*
The USC Iovine and Young Academy (IYA) provides unique BS and MS degrees that cultivate expertise at the intersection of technology, design, business and creativity. The degrees prepare students for leadership positions in product innovation, extended reality and spatial computing, design strategy, interactive technologies and physical computing, business of innovation, augmented intelligence, health and wellness innovation. Challenge Based Learning (CBL) is a core element of the IYA curriculum. Students partner with industry and community to engage cross-cutting challenges that don't have clear definitions or unique solutions. IYA graduates can transfer their existing knowledge to new problems areas, work fluently across sectors, and adapt quickly to rapidly changing work landscapes. They can lead innovation strategy of existing industries and develop new ventures that leverage new insights and produce discontinuities with current practice. IYA graduates constantly secure strategic positions with top technical and business companies and lead successfully commercialized startups. By focusing on learning that results from rich human experiences (rather than traditional formalized learning) the IYA provides a powerful path for diversifying education and the workforce. The IYA was founded in 2013 through a visionary $70,000,000 gift from Jimmy Iovine and Andre, Dr. Dre, Young. The IYA Dean leads the academic, administrative, external relations and development components of the School. (https://iovine-young.usc.edu/)

- *Founding Director, Calhoun Discovery Program* (March 2018 – August 2021)
The Discovery program aims to prepare lifelong learners who can move easily across knowledge domains and connect their specialized knowledge to complex collaborative contexts. Students combine disciplinary coursework with interconnected learning of concepts from multiple collaborating disciplines, and apply these integrated concepts to transdisciplinary, hands-on learning experiences engaging partners in industry and other professional sectors. The program is offered by the VT Honors College and has a modular and adaptive curriculum that is supported by an innovative distributed learning and collaboration platform. The

integration theme of the curriculum is "collaborative sociotechnical innovation for sustainable development." Eleven degree programs with complimentary approaches to the theme are participating in the program: Business Information Technology, Business Management, Communication, Computational Modeling and Data Analytics, Creative Technologies, Electrical and Computer Engineering, Graphic Design, Industrial Design, Industrial and Systems Engineering, Policy & Planning, Professional and Technical Communication. The program provides full scholarships and attracts a diverse student body. 60% of the CDP students identify as female and 30% of the students come from underserved or underrepresented populations. The yield of CDP student admission offers is 90%. The program is supported by a $20,000,000 gift from David Calhoun, CEO of Boeing, as well as significant gifts from industry. Founding industry partners include CAT, GE, AFP, Boeing as well as non-profit organizations. Over 35 faculty from the participating disciplines and professors of practice from industry and community are involved in the design, instruction, and management of the program. The program advances a co-creation paradigm where students, faculty and external participants work together to continuously update the program structure and its collaborative projects. (https://honorscollege.vt.edu/cdp.html)

- *Director, Calhoun Center for Higher Education Innovation* (March 2018 – August 2021)
The Calhoun Center for Higher Education Innovation facilitated an international conversation on "adaptive, life-long learning for an inclusive knowledge economy" and the diverse partnerships and platforms facilitating this type of learning. 70 participants from 32 organizations spanning academia, community, industry, and K-12 developed a report on these issues (https://honorscollege.vt.edu/cdp/Report.html).

- *Executive Vice President and Provost, Virginia Tech* (August 2015 - October 2017)
Responsible for the university's instructional, research, and outreach programs and the co-development of the academic budget and strategy of the university. Led a number of key new initiatives that were widely embraced by the University community and produced significant gains for the institution (see for example: https://vtnews.vt.edu/articles/2019/09/provost-the-rankings-2019.html):
o Co-chair of the Beyond Boundaries visioning exercise and report for the future of the university. (http://www.beyondboundaries.vt.edu/)
o Development of cross university, transdisciplinary, multifunction (research, education, engagement) communities of discovery. These dynamic communities leverage university differentiating strengths and help the university and region become a global destination for talent (and were thus named destination areas). (https://provost.vt.edu/destination-areas.html)
o Development of a new resource model for the university; the Partnership for an Incentive Based Budget (PIBB). The PIBB provides multidimensional data and decision support for customized long-term planning by each College across instruction, research and engagement.
(https://cafm.vt.edu/content/dam/cafm_vt_edu/buspracseminars/2017_seminar/Partnership%20for%20Incentive%20Base%20Budget.pdf)
o Development of plans for the integration of the Virginia Tech Carilion School of Medicine into VT and the expansion of the VTC School of Medicine and Research Institute into the Roanoke Health Sciences and Technology Campus (https://vtnews.vt.edu/articles/2016/03/bov-hstdistrict.html)
o Collaborated with university leadership, faculty and industry on the VT Metropolitan Innovation X plan (VT MIX) for the expansion of VT in the DC Metropolitan region through thematic cross sector efforts. The plan provided the base for the Virginia Tech Innovation Campus in the Amazon HQ2 proposal (https://vt.edu/innovationcampus/news/story.html) and the Virginia Cybersecurity initiative (Cyber X).
o Development of the College Access Collaborative that aims to increase academic preparation, access and affordability for first-generation, low-income, underrepresented minorities (Black, Latino, Native American), women and students from rural and inner-city communities (https://access.edm.vt.edu/). The CAC and related changes in admissions procedures has led to a significant increase in recruiting of students from underrepresented and underserved backgrounds.

o   Hired four new deans and four new academic vice presidents and achieved a gender balanced academic cabinet for the first time in the history of the institution.
o   Collaborated with the Vice President for Administration and Sasaki Associates for the development of the new campus master plan highlighting transdisciplinary districts; plan received a SUCP excellence award (https://www.facilities.vt.edu/planning-construction/campus-master-plan/about.html).
o   Worked with the ACC provosts on the support and launching of the ACC Smithsonian Creativity and Innovation Festival. (http://acceleratefestival.com/)
o   Collaborated with the Deans, Chairs, and Faculty Senate to create the Collegiate Faculty track for faculty focused on pedagogy. The track offers multi-year contracts and formalized promotion reviews.
o   Initiated a conversation with Deans, Chairs, and the Faculty Senate to establish a global context for review and support of faculty scholarship. From 2015 to 2018 the VT scholarship score gained 30 points in the Times global rankings (going from 40 to 70) and the University moved up 75 places in the Shanghai rankings (the fastest gains ever by the University). Since 2015 VT has continuously rose in the US New and World Report rankings reaching 49 in 2023.
o   Worked with the Vice President for Advancement to implement the Advancement model across all colleges. From 2015 onwards, VT has had record setting fund raising years.
o   Worked with the Vice President for IT and a cross-college group of faculty and administrators on plans for scaling technology assisted adaptive learning across the University curriculum.
o   Secured significant gifts and contracts for the University (see Gifts section of CV).

-   *Vice Provost for Design, Arts and Technology; Carnegie Mellon University* (2012 - 2015)
Responsible for university wide curriculum and research efforts focused on new creative industries and integrate technology, arts and innovation expertise. Position reported to the Provost and was part of the Academic Leadership Council (ALC) of the university and the university promotion and tenure committee. Position was also responsible for fundraising efforts related to cross cutting creative industries initiatives at CMU (see Gifts and Contracts).
o   Led the development of the Integrative Design, Arts and Technology network (IDeATe), (http://ideate.cmu.edu). IDeATe has participation from over 70 faculty from 15 different units. The IDeATe network designed and launched eight undergraduate concentrations on new creative industries themes related to cross-cutting CMU strengths: Game Design, Animation and Special Effects, Media Design, Sonic Arts, Design for Learning, Innovation and Entrepreneurship, Intelligent Environments, and Physical Computing. The concentrations, open to all undergraduates at CMU, are served by 35 interdisciplinary, studio-based courses promoting learning through collaborative making. Over 400 students are enrolled in IDeATe concentrations. A new facility was created for IDeATe at the central library of the university. The facility includes collaborative studios/classrooms, an interactive media lab/black-box, a physical computing lab, a digital fabrication lab, a sound lab, a portable media check-out facility and standard fabrication facilities. Satellite collaborative making facilities were developed throughout the university including dormitories and other common spaces. The annual budget of the IDeATe undergraduate curriculum is supported 50% through tuition and 50% through external income.
o   The IDeATe network also designed the CMU Integrative Media Program (IMP) in NYC at Steiner Studios in partnership with the city of NY (part of the NYC Applied Sciences Initiative). The IMP comprised four inter-related, interdisciplinary Masters degrees: Emerging Media Masters (offered collaboratively by the School of Computer Science, College of Fine Arts and College of Engineering), Masters in Computational Data Science (School of Computer Science), Masters in Integrated Innovation (offered through the College of Engineering, Tepper School of Business and School of Design), and Masters in Urban Design (School of Architecture).
    (https://www.cmu.edu/news/stories/archives/2013/november/nov20_steinerstudios.html)

o The Vice Provost position also supervised the Entertainment Technology Center (ETC). Founded by Randy Pausch and Don Marinelli, the ETC is a premiere professional center for interactive entertainment with special focus on the art and science of game design and development. The ETC offers a two-year Master of Entertainment Technology (MET) degree that is jointly conferred by the School of Computer Science and the College of Fine Arts. (https://www.etc.cmu.edu)

- *Founding Director; School of Arts, Media and Engineering (AME); Arizona State University* (2003-2012)
Led the development of the vision, research, and education models of the School of Arts, Media and Engineering (http://ame.asu.edu), and the creation of joint graduate and undergraduate curricula with twelve units at ASU spanning engineering, sciences, humanities, arts and design. Let the development and establishment of a transdisciplinary BA in Digital Culture and a PhD degree in Media Arts and Sciences. Oversaw the hiring of 12 interdisciplinary faculty, 10 administrative and technical staff and the recruitment of an interdisciplinary student body. The school brought together its highly differentiated participants through transdisciplinary themes relating to media applications in health, education, communication, and creativity. The school developed interdisciplinary promotion and tenure criteria customizable to each faculty through an MOU. By 2012, the School had 250 undergraduate and 50 graduate students and an operating budget of $2,000,000 (with $800,000 coming from an endowment). The school produced research expenditures of over $750,000 a year. The founding director led the securing of significant gifts and grants for the realization of the school (see Gifts and Grants)

- *Director, Institute for Studies in the Arts (ISA); Arizona State University* (2001 - 2003)
Prepared the evolution of the ISA (a research unit without an educational mission) into the School of Arts, Media and Engineering. Managed the arts and technology research and creative activities and the development/fundraising activities of the Institute.

- *Associate Director, Computer Music Center (CMC), Columbia University* (1995 - 2001)
Director of Research and Development at the Computer Music Center (http://music.columbia.edu/cmc); headed the development of interdisciplinary research and education projects, fundraising and outreach activities and managed center budget.

- *Director, Institute of Psychoacoustics, Aristotle University of Thessaloniki, Greece* (1992 - 2000)
Led the development of the academic structure and research mission of the Institute, and its outreach and fundraising activities. The Institute was a joint project of the Medical School, Engineering School, Department of Music and Department of Psychology. Spent a total of 24 months physically in Greece over the eight years of my association with the Institute with the rest of the work done remotely.

- *Director, Computer Music Center, CCMR* (Ianis Xenakis, President), Greece (1991 - 94)
Developed and taught beginner and advanced courses in computer music; planned, installed and maintained computing and digital audio infrastructure.

Academic Appointments

University of Southern California (2021-current)
- Professor of Arts, Technology and Business of Innovation, Iovine and Young Academy (IYA)
  o Faculty co-lead of Augmented Intelligence area (https://iovine-young.usc.edu/augmented-intelligence)
- Courtesy Professor, Department of Bioengineering, Viterbi School of Engineering
  o Director, Interactive Neurorehabilitation Lab (https://sites.usc.edu/inr/)

Virginia Tech (2015 - 2021)
- Professor, School of Biomedical Engineering and Mechanics, College of Engineering
    o Co-Director, Virginia Tech Carilion Smart Rehabilitation Lab
    o Co-Director, Interactive Neurorehabilitation Lab
- Professor, School of Performing Arts, College of Liberal Arts and Human Sciences

Carnegie Mellon University (2012 - 2015)
- Professor, School of Design
    o Co-Director, Interactive Neurorehabilitation Lab
- Professor, School of Music, College of Arts
- Courtesy Professor of Bioengineering, College of Engineering

Arizona State University (2003 - 2012)
- Professor of Arts, Media and Engineering, College of Arts and Design, and College of Engineering
    o Director, Mixed Reality Rehabilitation Lab
- Professor of Music, College of Arts and Design (2001 - 2003)

Columbia University (1995 - 2001)
- Adjunct Assistant Professor of Music, Department of Music, Columbia University
    o Director of Research and Development, Computer Music Center

Education

DEGREES
     DMA degree, Music Composition and Computer Music, Columbia University (1988 - 1994)
     MA degree, Music Composition, Columbia University (1986 - 1988)
     BA degree, Music composition, Ithaca College (1981 - 1985)
PRINCIPAL TEACHERS
     Chou Wen Chung, Roger Reynolds, Bradford Garton, Jonathan Kramer, Karel Husa,
     Theodore Antoniou, Jacques Monod, George Edwards, Susan Blaustein
OTHER EDUCATION
     Composition and conducting seminars with Pierre Boulez (summer 1988)
     Composition seminars with Olivier Messiaen (summer 1987)
     Composition seminars with Ianis Xenakis (summer 1985)
     Graduate work in music composition and theory, Boston University (1985 - 1986)

Gifts and contracts

- Faculty and administrative lead, gift for development of Challenge-Based-Learning (CBL) tool kit; Verizon Inc.; $1,000,000; August 2022

- Faculty and administrative lead, gift for student scholarships in the Honors College; Caterpillar Inc.; $1,250,000; September 2019

- Faculty and administrative lead, industry gift and partnership contract for the support of the Calhoun Honors Discovery Program; The Boeing Company; $3,000,000 cash plus significant in-kind support; August 2018 (https://vtnews.vt.edu/articles/2018/07/honors-boeing.html)

- Faculty and administrative lead, gift from David and Barbara Calhoun for the development of the Calhoun Honors Discovery Program and Center for Higher Education Innovation; $20,000,000; March 2018 (https://vtnews.vt.edu/articles/2018/03/calhoun-gift.html)

- Administrative lead, multi-donor gift for the development of the Intelligent Infrastructure facilities at Virginia Tech; $25,000,000; 2017 (https://vtnews.vt.edu/articles/2016/09/research-intel-infrastructure.html)

- Faculty and administrative lead, program development contract with the Economic Development Council of NYC - Applied Sciences Initiative; for the development of the CMU Integrative Media Program in NYC; $3,200,000; 2013 - 2016 (https://www.nytimes.com/2013/11/21/nyregion/carnegie-mellon-bringing-sciences-programs-to-new-york-city.html)

- Faculty and administrative lead, private gift for the development of the CMU Integrative Media Program in NYC; $5,000,000; 2013 - 2020 (https://www.cmu.edu/news/stories/archives/2013/november/nov20_steinerstudios.html)

- Faculty and administrative lead, Autodesk gift for the development of the Reality Computing Studio at CMU $220,000; 2014 - 2016

- Faculty and administrative lead, Grable and Benedum Foundations gift for the development of the Learning Media Design Center at CMU; $300,000; 2014 - 2017

- Faculty and administrative lead, Hillman Foundation gift for the development of the Integrative Design, Arts and Technology (IDeATe) curriculum; $270,000; 2014 – 2016

- Faculty and administrative lead, Intel Education Program gift for the development of the Integrative Design, Arts and Technology (IDeATe) curriculum; part of the Intel Design Network program; $150,000; 2014

- Administrative lead, for a Creative Technologies Industry Cluster, in partnership with the Pittsburgh Technology Council; Benedum Foundation; $250,000; 2012

- Faculty lead, $20,000,000 private gift (anonymous donor) for the development and implementation of the Digital Culture Curriculum; gift secured through the Offices of the President of ASU and the Dean of the Herberger Institute. Developed the concept, the funding proposal and the pitch material and participated in the pitch together with the President and Dean; Fall 2009 (https://asunow.asu.edu/content/asu-launches-new-bachelors-degree-digital-culture)

- Faculty and Administrative lead, IT 301-State of Arizona grant; seed funds for the hiring of engineering faculty in the School of Arts, Media and Engineering; $300,000; May 2002 - May 2005

- Administrative lead, $500,000 total industry and government sponsorships (EU, Heineken, SGI, Wolfram, Ministry of Culture and more) for the realization of the 1997 International Computer Music Conference.

- Administrative lead, $150,000 subsidy from the Greek Ministry of Culture (1993); seed funds for the Institute of Psychoacoustics at the University of Thessaloniki.

Research grants

- Principal Investigator; National Science Foundation, Smart and Connected Health Program; Semi-Automated Rehabilitation at the Home; $1,100,000; 2020-2024; https://sites.usc.edu/inr/

- Co-Principal Investigator; National Institute on Disability and Rehabilitation Research; Rehabilitation Engineering Research Center on Sensor Technologies Applied to Rehabilitation in Stroke; $4,500,000; PI William Rymer, Shirley Ryan Ability Lab, Chicago; 10/2019-10/2024; https://sites.usc.edu/inr/

- Principal Investigator; NSF Collaborative Projects: EAGER: A virtual eXchange to support networks of creativity and innovation amongst Science, Engineering, Arts and Design (XSEAD); $260,000; 8/2011-2014; http://xsead.cmu.edu/

- Principal Investigator, State of Arizona Biomedical grant; Mixed Reality Rehabilitation for Stroke survivors; in collaboration with Banner Baywood Medical Center; $300,000; 2008-2010

- Principal Investigator, NSF Integrated Graduate Research and Education Traineeship program (IGERT) award for interdisciplinary research and education in experiential media; $3,000,000; September 2005 – 2012; http://ame.asu.edu/igert/

- Co-Principal Investigator, Kauffman Foundation grant for ASU "University as Entrepreneur" initiative; $5,000,000; April 2007 – 2012; http://entrepreneurship.asu.edu

- Co-Principal Investigator, NSF CISE Research Infrastructure award for motion analysis; $1,400,000; July 2004 – July 2011

- Principal Investigator, NEA "Technology: Resources for Change" grant for motione project; $150,000; September 2003-April 2004

- Principal Investigator, IT 301-State of Arizona grant; seed funds for the development of IT research in the School of Arts, Media and Engineering; $1,000,000; May 2003-May 2008

- Principal Investigator, $150,000 gift from JPMorganChase for the JPMorganChase Kids Digital Dance and Sound project, 2001

Publications - Books

- Rikakis, T., Arnold, A., Keyel, J. et al. (2020). *Adaptive Life Long Learning for an Inclusive Knowledge Economy.* Virginia Tech Publications in partnership with the International Academic Forum and the Future Talent Council; doi:https://doi.org/10.21061/adaptive-learning-report (August 2020)
  - o Lead author and editor

Publications – Papers

- K. Thopalli, T. Ahmed, N. Meniconi, A. Kelliher, T. Rikakis, S. Wolf, P. Turaga (2023). Advances in Computer Vision for Home-Based Stroke Rehabilitation, in Computer Vision: Challenges, Trends, and Opportunities; edited by Atiqur Rahman Ahad, Upal Mahbub, Matthew Turk, Richard Hartley. CRC Press
  - Second faculty author

- T. Ahmed, T. Rikakis, A. Kelliher, M. Soleymani (2023). ASAR Dataset and Computational Model for Affective State Recognition During ARAT Assessment for Upper Extremity Stroke Survivors. ACM International Conference on Multimodal Interaction
  - First faculty author

- A. Sarker, D-R. Emenonye, A. Kelliher, T. Rikakis, R. M. Buehrer, A. Asbeck (2022). Capturing Upper Body Kinematics and Localization with Low-Cost Sensors for Rehabilitation Applications. Sensors, 2022, 22
  - Second Faculty author

- T. Ahmed, K. Thopalli, T. Rikakis, P. Turaga , A. Kelliher, JB Huang, and S. Wolf (2021). Automated movement assessment in stroke rehabilitation. Frontiers in Neurology
  - First faculty author

- Y. Han, A. Varadarajan, T. Kim, G. Zheng, K. Kitani, A. Kelliher, T. Rikakis, and Y-L Park. (2021). Smart Skin: Vision-Based Soft Pressure Sensing System for In-Home Hand Rehabilitation, Soft Robotics
  - Third Faculty author

- A. Arnold, J. Keyel, A. Soysal, M. Kretser, S. Sagheb, T.Rikakis (2021). Toward an Integrative Professional and Personal Competency-Based Learning Model for Inclusive Workforce Development, International Multi-Conference on Society, Cybernetics and Informatics (IMSCI 2021), Orlando, July 18-21, 2021
  - Senior author

- J. Clark, S. Zilevu, T. Ahmed, A. Kelliher, S. Yeshala, S. Garrison, C. Garcia, O. Menezes, M. Seth, T. Rikakis. (2021). Hybrid Workflow Process for Home Based Movement Capture, June 2021, ACM IMX
  - Second faculty author

- Kelliher, A., Zilevu, S., Rikakis, T., Ahmed, T., Troung, Y., and Wolf, S. (2020). Towards standardized processes for physical therapists to quantify patient rehabilitation. In *Proceedings of the 2020 CHI Conference on Human Factors in Computing Systems (CHI '20)*. ACM, New York, NY, USA, 1–13.
  - Second faculty author

- Patibanda, R., et al. (2020). Motor Memory in HCI. In *Extended Abstracts of the 2020 CHI Conference on Human Factors in Computing Systems (CHI EA '20)*. ACM, New York, NY, USA, 1–8.

- Kelliher, A., Zilevu, S., Rikakis, T., and Wolf, S. (2019). Towards the development of semi-supervised rehabilitation systems for the home. In *Proceedings of the Technology, Mind, Society Conference, Washington DC*, October 3 – 5, 2019
  - Second faculty author

- <u>Rikakis, T.,</u> Kelliher, A., Swearer, R., Nicewonger, T., and Holt, M. (2019). Transdisciplinary and Trans-sector Knowledge Ecosystems Leverage Interdependencies, Promote Agency and Advance Knowledge Democracies. In *Proceedings of the European Conference on Education* (*keynote paper*), London, UK, July 19 – 21, 2019.
  - First author

- <u>Rikakis, T.,</u> Kelliher, A., Huang, J-B., Sundaram, H. (2018). Progressive Cyber Human Intelligence. *ACM Interactions* 25, 4 (July - August 2018), 52–56.
  - First author

- <u>Rikakis, T.,</u> Kelliher, A., Choi, J., Huang, J-B., Kitani, K., Zilevu, S., and Wolf, S. (2018). Semi-automated home-based therapy for the upper extremity of stoke survivors. In *Proceedings of the 11th PErvasive Technologies Related to Assistive Environments Conference (PETRA '18). Association for Computing Machinery, New York, NY, USA, 249–256.*
  - First author

- Kelliher, A., Choi, J., Huang, J-B., <u>Rikakis, T.,</u> and Kitani, K. (2017). HOMER: An Interactive System for Home Based Stroke Rehabilitation. In *Proceedings of the 19th International ACM SIGACCESS Conference on Computers and Accessibility (ASSETS '17).* ACM, New York, NY, USA, 379–380
  - Second faculty author

- Baran, M., Lehrer, N., Duff M., Venkataraman, V., Turaga, P., Ingalls, T., Rymer, Z., Wolf, S., and <u>Rikakis T. (2015).</u> Interdisciplinary Concepts for Design and Implementation of Mixed Reality Interactive Neurorehabilitation Systems for Stroke. *Phys Ther.* 2015;95(3):449-460.
  - First faculty author

- Venkataraman, V., Turaga, P., Baran, M., Lehrer, N., <u>Rikakis, T.,</u> and Wolf, S. (2014). Component-Level Tuning of Kinematic Features from Composite Therapist Impressions of Movement Quality. *IEEE J Biomed Health Inform.* 2016;20(1):143-152.
  - Second faculty author

- <u>Rikakis T.,</u> Kelliher A., and Lehrer N. (2013). Experiential Media and Digital Culture. *Computer* 46, 1 (January 2013), 46–54.
  - First author

- Byrne D., Kelliher A., Cox D., <u>Rikakis T.</u> (2013). XSEAD: A Community Platform for Art-Science Integration. *IEEE MultiMedia,* vol. 20, no. 4, pp. 4-7, Oct.-Dec. 2013
  - Third faculty author

- Venkataraman, V, Turaga, P., Lehrer, N., Baran, M., <u>Rikakis T.</u>, and Wolf, S. (2013). Attractor-Shape for Dynamical Analysis of Human Movement: Applications in Stroke Rehabilitation and Action Recognition. In *Proceedings, 2013 IEEE Conference on Computer Vision and Pattern Recognition Workshop*, CVPRW 2013, 514-520.
  - Second faculty author; second faculty advisor of first student author (Venkataranam)

- <u>Rikakis, T.,</u> Tinnaple, D., Olson, L. (2013). The Digital Culture Degree: a competency-based interdisciplinary program spanning engineering and the arts. *2013 IEEE Frontiers in Education Conference (FIE)*, Oklahoma City, OK, 2013, pp. 1611-1617

o First author

- Lehrer N., Chen Y., Wolf S. and <u>Rikakis T</u>. (2013). Exploring the bases for a mixed reality stroke rehabilitation system, Part II: Design of Interactive Feedback for Upper Limb Rehabilitation. *Neurorehabil Neural Repair.* 2013;27(4):306-315.
    o First faculty author; advisor of first student author (Lehrer)

- Duff, M., Chen, Y., Liu, S-M., Blake, P., Wolf, S., and <u>Rikakis T.</u> (2012). Adaptive mixed reality rehabilitation improves quality of reaching movements more than traditional reaching therapy following stroke. *Journal of Neurorehabilitation and Neural Repair,* December 2012
    o First faculty author; advisor of first student author (Duff)

- LaFayette, C., <u>Rikakis, T.</u>, Cox, D., Nadarajan, G., Strohecker, C., Jennings, P., Wardrip-Fruin, N., Malina, R., Brown, S., and Gibb, A. (2012). Network for sciences, engineering, arts and design. In ACM SIGGRAPH 2012 Posters (SIGGRAPH '12). Association for Computing Machinery, New York, NY, USA, Article 79, 1
    o Second faculty author

- Lehrer, N., Chen, Y., Wolf, S. and <u>Rikakis, T</u>. (2011). Exploring the bases for a mixed reality stroke rehabilitation system, Part I: A unified Approach for Representing Action, Quantitative Evaluation and Interactive Feedback. *J Neuroeng Rehabil.* 2011;8:51.
    o First faculty author; advisor of first student author (Lehrer)

- <u>Rikakis T</u>. (2011). Utilizing Media Arts Principles for Designing Effective Neurorehabilitation Systems. *Conf Proc IEEE Eng Med Biol Soc*. 2011;2011:1391-1394
    o Author

- <u>Rikakis T</u>. (2011). Reviews and Tenure. In Pfirman, S.L. and Martin, P., *Interdisciplinary Hiring and Career Development: Guidance for Individuals and Institutions*, National Council for Science and the Environment, 2011
    o Author

- Chen Y., Duff, M., Lehrer, N., Liu, S-M., Blake, P., Wolf, S., Sundaram, H., and <u>Rikakis, T.</u> (2011). A Novel Adaptive Mixed Reality System for Stroke Rehabilitation: Principles, Proof of Concept and Preliminary Application in Two Patients. *Topics in Stroke Rehabilitation* 2011;18(3):212–230
    o First faculty author; advisor of first student author (Chen)

- Chen, Y., Duff, M., Lehre,r N., Sundaram, H., He, J., Wolf, S., and <u>Rikakis, T.</u> (2011). Computational Framework for Quantitative Evaluation of Movement during Rehabilitation, Proceedings of *International Symposium on Computational Models for Life Sciences*, pp 317 – 326.
    o First faculty author; advisor of first student author (Chen)

- Faith, A., Chen, Y., <u>Rikakis, T.</u> and Iasemidis, L. (2011). Interactive Rehabilitation and Dynamical Analysis of Scalp EEG. *Conf Proc IEEE Eng Med Biol Soc*. 2011;2011:1387-1390
    o Second faculty author; co-advisor of first student author (Faith)

- Baran, M., Lehrer, N., Siwiak, D., Chen, Y., Duff,, M., Ingalls T., and <u>Rikakis T</u>. (2011). Design of a Home-based Adaptive Mixed Reality Rehabilitation System for Stroke Patients. *Conf Proc IEEE Eng Med Biol Soc.* 2011;2011:7602-7605.
    - o First faculty author; advisor of first student author (Baran)

- Duff, M., Chen, Y., and <u>Rikakis, T</u>. (2010). Mixed Reality Rehabilitation for Stroke Survivors Promotes Generalized Motor Improvements. *Conf Proc IEEE Eng Med Biol Soc.* 2010;2010:5899-5902.
    - o First faculty author; advisor of first student author (Duff)

- <u>Rikakis, T</u>. (2010). Towards a Post-Disciplinary Liberal Education. Keynote Address, in *Proceedings of the 3rd Symposium on Engineering and Liberal Education* (2010), Union College, Schenectady, NY
    - o Author

- Duff, M., Chen, Y., Attygalle, S., Herman, J., Sundaram, H., Qian, G., He, J., and <u>Rikaki,s T</u>. (2010). An Adaptive Mixed Reality Training System for Stroke Rehabilitation. *IEEE Trans Neural Syst Rehabil Eng*. 2010;18(5):531-541
    - o First faculty author; advisor of first student author (Duff)

- <u>Rikakis, T</u>. (2009). Innovative Faculty Evaluation Criteria for Incentivizing High-Impact Interdisciplinary Collaboration. *2009 39th IEEE Frontiers in Education Conference*, San Antonio, TX, 2009, pp. 1-6
    - o Author

- Chen, Y., Sundaram, H., <u>Rikakis, T</u>., Olson, L., Ingalls, T., and He, J. (2008). Experiential Media Systems – The Biofeedback Project. In: Divakaran A. (eds) *Multimedia Content Analysis. Signals and Communication Technology.* Springer, Boston, MA.
    - o Second faculty author

- Chen, Y., Xu, W-W., Sundaram, H., <u>Rikakis, T</u>., Liu, S-M. (2007). Media Adaptation Framework in Biofeedback System for Stroke Patient Rehabilitation. In *Proceedings of the 15th ACM international conference on Multimedia (MM '07)*. ACM, New York, NY, USA, 47–57.
    - o Second faculty author

- Wallis, I., Ingalls, T., <u>Rikakis, T</u>., Olsen, L., Chen, Y., Xu, W-W., and Sundaram H. (2007). Real-Time Sonification of Movement for an Immersive Stroke Rehabilitation Environment. In *Proceedings of the 13th International Conference on Auditory Display (ICAD,* 497-5606.
    - o Second faculty author

- Chen, Y., Huang, H., Xu, W-W., Wallis,, I., Sundaram H<u>., Rikakis, T</u>., He, J., Ingalls, T., and Olson, L. (2006). The Design Of A Real-Time, Multimodal Biofeedback System For Stroke Patient Rehabilitation. In *Proceedings of the 14th ACM international conference on Multimedia (MM '06)*. ACM, New York, NY, USA, 763–772.
    - o Second faculty author; co-advisor of first student author (Chen)

- <u>Rikakis, T</u>., Spanias, A., Sundaram, H., and He, J. (2006). An Arts, Sciences and Engineering Education and Research Initiative", In *Proceedings. Frontiers in Education.* 36th Annual Conference, 13-18.
    - o First Author

- Sundaram, H. and <u>Rikakis, T</u>. (2008). Experiential Media Systems. In *Encyclopedia of Multimedia*. B. Furtht (eds). NY NY., Springer Verlag. XXVIII: 989p.

o Second Author

- Chen, Y., Huang, H., Xu, W-W., Wallis, I., Sundaram, H., <u>Rikakis, T.</u>, He, J., Ingalls, T., and Olson, L. (2006). A Real-Time, Multimodal Biofeedback System For Stroke Patient Rehabilitation. In *Proceedings of the 14th ACM international conference on Multimedia (MM '06).* Association for Computing Machinery, New York, NY, USA, 501–502. *Winner of best demo award at SIG ACM MM 2006*
    o Second faculty author; co-advisor of first student author (Chen)

- Dyaberi, V., Sundaram, H., <u>Rikakis, T.</u>, and James, J. (2006). The Computational Extraction Of Spatio-Temporal Formal Structures in the Interactive Dance Work '22'. In *Proceedings of the 14th ACM international conference on Multimedia (MM '06)*. ACM, New York, NY, USA, 748–751.
    o Second faculty author; co-advisor of first student author (Dyaberi)

- Xu, W-W., Chen, Y., Sundaram, H., and <u>Rikakis, T.</u> (2006). Multimodal Archiving, Real-Time Collaborative Annotation and Information Visualization in a Biofeedback System for Stroke Patient Rehabilitation. In *Proceedings of the 3rd ACM workshop on Continuous archival and retrieval of personal experiences (CARPE '06).* ACM, New York, NY, USA, 3–12.
    o Second faculty author

- Whitele,y D., Qian, G., <u>Rikakis, T.</u>, James, J., Ingalls, T., Wang, S., and Olson, L. (2005). Real-Time Tracking of Multiple People from Unlabelled Markers and Its Application in Interactive Dance. In *Proceedings of British Machine Vision Conference, Ox*ford, UK, September 5-8, 2005
    o Second faculty author

- Spanias, A., Sundaram, H., He, J., and <u>Rikakis, T.</u> (2005). An Interdisciplinary Arts and Engineering Initiative for Experiential Multimedia. In *Proceedings of ASEE Annual Conference,* Portland, OR, 2005
    o Second faculty author

- Wang, Y., Qian, G., and <u>Rikakis, T.</u> (2005). Robust Pause Detection Using 3D Motion Capture Data For Interactive Dance. In *Proceedings of the International Conference on Acoustics, Speech, and Signal Processing*, vol. 2 1173-1176.
    o Second faculty author

- Ingalls, T., <u>Rikakis, T.</u>, James, J., Qian, G., Olson, L., Guo, F., and Wong, S. (2004). A Movement Recognition Engine for the Development of Interactive Multimedia Work . *AISB 2004 Convention: Motion, Emotion and Cognition - ConGAS Symposium on Gesture Interfaces for Multimedia Systems (GIMS).* 2004
    o Second faculty author

- Sridharan, H., Sundaram, H., and <u>Rikakis T.</u> (2003). Computational models for experiences in the arts and multimedia. In *Proceedings of the 2003 ACM SIGMM workshop on Experiential telepresence (ETP '03).* ACM, New York, NY, USA, 31–44.
    o Second faculty author

- <u>Rikakis, T.</u> (2001). A practical microtonal pitch space; theoretical and psychoacoustic issues, compositional applications. *2001 Microfest Conference and Festival*, Harvey Mudd College, CA, April 2001.
    o Author

- Ghez, C., Dubois, L., Cook, P., and <u>Rikakis, T</u>. (2000). An Auditory Display System for Aiding Interjoint Coordination. In *Proceedings of the International Conference on Auditory Display* (ICAD) 2000, Atlanta, GA, March 2000
    - o Second faculty author

Interactive Technology Projects and Labs

- <u>Rikakis, T</u>., Ahmed T., Wolf S., Lee J., Turaga P., USC Interactive Neurorehabilitation Lab, https://sites.usc.edu/inr/
    - o   Principal Investigator

- <u>Rikakis, T</u>., Shah, A., Buerher, M., DeLuca, S., Huang, J-B., Kelliher, A., Moskal, J., Queen, R., Sprinkel, L., Thompson,V., Weiss, R. Virginia Tech Carilion Smart Rehabilitation Lab; http://smartrehab.vtc.vt.edu
    - o Principal Investigator

- <u>Rikakis, T.,</u> Kelliher, A., Sundaram, H., Ingalls, T., Olson, L, Huang, J-B, Wolf, S. et. al (2003 – ongoing); Interactive Neurorehabilitation Systems and Applications; http://vtinr.com/
    - o Principal Investigator

- <u>Rikakis, T.,</u> Olson, L, Tinapple, D., Sundaram, H. ; online tools for student and faculty exploration of interdisciplinary, user-driven curricula; developed for the digital culture curriculum at ASU (2009-ongoing); http://digitalculture.asu.edu/map
    - o Principal Investigator

- <u>Rikakis, T.,</u> Brown, T., Jones, BT., Kaiser, P., Reynolds, R., Bahn, C., Qian, G. et al. *Motione,* presented at Monaco Dance Forum (2006), Lincoln Center (2004), Nelson Fine Arts Center (2004); https://ame2.asu.edu/motione/
    - o Project Co-Director, co-lead of concept development and project management, participated in development of movement analysis and interactive engine components

- <u>Rikakis, T.,</u> Garton, B., Repetto, D., Trueman, D.,Dubois, L., Bradburne, J., and Kaiser, P. ; *JPMorganChase Kids Digital Dance and Sound project (2001),* with Ballet Frankfurt, Lego, and mak.frankfurt, www.music.columbia.edu/kids
    - o Co-Principal Investigator, co-lead of concept development, project management and fundraising, co-author of "Making Noise" component

Original Music Compositions (and premieres)

- *The song of the tree I* (1999), for computer generated tape
    - o Neuma Records, Electroacoustic Music series (VII), May 2004
    - o Premiered in Athens, December 1st 1999

- *Embracing the Tree* dance video (2000), for computer generated tape and videotaped choreography
    - o Premiered at the Dance on Camera Festival 2001, New York

- *Asymphony of characters* (1998), for computer generated tape
    - o Music for the film Asymphony of Characters which opened in December 1998 in Europe

- *A Third Perspective* (1996), for computer generated tape
    - o Premiered in New York, September 1996

- *Orgia* (1995), for computer generated tape
    - o Incidental music for Pierre Paolo Pazolini's play "Orgia", staged in Athens, Greece, 1995-96 season

- *Krisis (1994),* for flute, bassoon, cello and trombone
    - o Premiered at the Metropolitan Concert Hall in Athens, March 1994

- *Hard Silver* (1993), for computer generated tape
    - o Premiered at the American Microtonal Festival, New York University, May 1993

- *Digital duo for trombone and cello* (1992), for computer generated tape
    - o Written as a stimulus for an experiment on microtonal pitch perception and related brain functions

- *Komvos II* (1991), for chamber orchestra (flute, trumpet, horn, trombone, violin, viola, cello, bass)
    - o Premiered in New York, American Microtonal Festival, June 1991

- *Komvos* (1990), (first version) for chamber orchestra
    - o Premiered in Boston by ALEA III, May 1990

- *Amaranto Pelago* (1989), for flute, clarinet, horn, violin, viola, cello
    - o Premiered in New York, March 1990, by members of Speculum Musicae

- *Yellow and Blue* (1988), for orchestra
    - o Master's Thesis

- *Midday Dance* (1987), for alto flute, horn, cello and marimba
    - o Premiered in New York, Columbia Composers concert, April 1988
- *Oria* (1987), for solo violin
    - o *Premiered in New York, Columbia Composers concert, December 1987*

- *Study* (1986), for flute, clarinet, trumpet, horn, trombone, violin, viola, cello
    - o Premiered in Athens by the Athens Contemporary Music Orchestra, December 1986

- *Vraxokipos* (1986), for 6 baritones amplified
    - o Premiered in Boston, Boston University Composers Concert, April 1986

- *Mitikas* (1985), for four violins and four flutes
    - o Premiered in Boston, Boston University Composers Concert, November 1985

- *Quintet* (1985), for oboe, 2 violins, viola and cello
    - o Premiered in Ithaca, NY, April 1985

- *Thalatta-Thalatta* (1984), for full choir, brass quintet and percussion
    o Premiered in Ithaca, New York, Ithaca College choir, April 1985

- *Music for television programs and shows of the Greek National Television* (1990 - 1996)

Curriculum Development

- *Iovine and Young Academy (2021-current)*
Worked with the faculty (while continuously soliciting advise from students, alumni and industry) to increase flexibility and adaptation of the BS and MS degrees and organize research and teaching activity at the IYA into intersectional areas of strength: product innovation, extended reality and spatial computing, design strategy, interactive technologies and physical computing, business of innovation, augmented intelligence, health and wellness innovation. We also advanced and formalized Challenge Based Learning as a core component of the IYA curriculum.

- *The Collaborative Discovery Honors Diploma (2018 - 2021)*
The diploma is awarded to students graduating from the Calhoun Discovery Program (CDP) at the Honors College. The CDP curriculum aims to prepare integrative, lifelong learners who:
▪ Can move easily across knowledge domains and pick up diverse new skills in a just-in-time approach.
▪ Can connect their specialized knowledge to complex collaborative contexts for problem setting and problem solving.
▪ Use complex relational and collaborative contexts for self-discovery and personal fulfillment.
▪ Connect personal fulfillment to advancing an equitable and sustainable society.
The CDP helps learners develop these competencies through integrative development of domain specific, domain general, and life skills. Students from all nine degrees participating in the program attend transdisciplinary problem setting and problem-solving studios throughout their four years of study where they learn to integrate the feasibility, viability, desirability, and sustainability components of complex sociotechnical problems. Problem spaces are contributed by the industry, non-profit, and professional partners of the program and by the students. Students also realize their junior technical electives and senior capstone projects through transdisciplinary studios in collaboration with other students and industry partners. Realization of capstones may involve internships/residencies with the partners. These diverse collaborations encourage students to discovery their own learning pathways and the disciplinary and interdisciplinary knowledge needed for each pathway. The interdisciplinary knowledge a student seeks is provided through just-in-time modules delivered in a flipped classroom format. These modules make up a large part of the students' general education experience. In the process, general education serves as a connector of specialization and collaboration, and a catalyst for versatile and integrated professional and personal development. Faculty specializing in transdisciplinary education develop and deliver the modules and the studios and provide on-on-one mentoring to students. The faculty of the program includes experts from industry serving as distinguished professors of practice. Each student maintains a digital design journal to help them reflect on their learning and to facilitate mentoring. A customized assessment rubric for the program is under development. (https://honorscollege.vt.edu/cdp.html)

- *Integrative Design, Arts and Technology undergraduate concentrations (2014)*
Eight cross-CMU interdisciplinary concentrations and minors in Animation and Special Effects, Entrepreneurship for Creative Industries, Game Design, Intelligent Environments, Learning Media, Media Design, Physical Computing, and Sound Design. The concentrations are available to students in any major and are embedded in relevant degrees across the participating colleges. The minors are completed

alongside a primary major. The concentrations and minors combine i) introductory courses accessible to all students, ii) cross training courses facilitating the gaining of skills in areas beyond the major that are relevant to the concentration and iii) collaborative capstone projects. (http://ideate.cmu.edu/concentrations_and_minors)

- *Digital Culture Undergraduate Curriculum (BA in Digital Culture) (2008)*
Curriculum combines 40 courses taught by faculty from 12 different disciplines. Courses are connected through a common list of proficiencies (outcomes). Proficiencies are diverse, ranging from "modeling and inference" to "visualization and sonification", and from "form and composition" to "social mechanisms and understanding." Students plan their own education paths using the Course Map: an online tool for exploring different routes to gaining specific proficiencies and consequent access to related courses and capstones. Responsible for developing the concept, creating the partnerships with the participating units and leading the interdisciplinary team that created and implemented the degree. The degree had enrolled 250 majors and 50 minors by August 2013. (https://asunow.asu.edu/content/asu-launches-new-bachelors-degree-digital-culture)

- *PhD in Media Arts and Sciences (2005)*
The PhD in Media Arts and Sciences (MAS) is jointly conferred by the Herberger Institute for Design and the Arts and the Ira. A. Fulton Schools of Engineering. MAS PhD students learn to translate, transport, and combine knowledge across disciplines as they develop innovative experiential media systems and accompanying theoretical models. The degree structure includes transdisciplinary media courses (through the School of Arts, Media and Engineering) in sensing, modeling, perception and cognition, feedback and interaction, and experiential construction. It also includes elective course credits complementing the student's research interests, and substantial research and dissertation hours devoted to collaborative research. Responsible for writing the degree proposal and leading the team implementing the degree.

- *Digital Media Concentrations in arts, design, engineering and science Masters and PhD Degrees (2003)*
The Arts, Media and Engineering concentrations provide an experience combining solid discipline-specific knowledge with interdisciplinary education and research in experiential media. Concentrations are available in the following degree paths: Design, Environment, and the Arts (PhD), Design (MSD), Dance (MFA), Music (MM, DMA), Theatre and Film (MFA), Art (MFA), Computer Science and Engineering (MS, PhD), Electrical Engineering (MS, PhD), Bioengineering (PhD specialization), Psychology (PhD), Educational Technology (PhD). Responsible for working with faculty members and administrators of each of the collaborating units to develop and implement the proposals.

Teaching
Level   Course Title
Virginia Tech
300   Adaptive Cyber Human Learning
200   Collective Intelligence
200   Personal Knowledge in Action
200   Collaborative Sociotechnical Innovation
200   Interaction, Arts and Sociotechnical Innovation
200   Artistic Form in Sociotechnical Innovation
200   Aesthetics and Sociotechnical Innovation
Carnegie Mellon

100	Introduction to Media Synthesis and Analysis

ASU

500	System Modeling
500	Mediating Complexity
500	Computational Models for Experiences
100	Introduction to Digital Culture

Columbia University

500	Basic Electroacoustics I
500	Basic Electroacoustics II
500	Movement-Sound Interaction
300	Interactive Composition
200	MIDI Music Production Techniques
100	Music Humanities

Graduate Students Supervised

Tamim Ahmed, (PhD, Bioengineering), Setor Zilevu (PhD, Computer Science), Yinpeng Chen (PhD, Electrical Engineering), Margaret Duff (PhD, Bioengineering), Nicole Lehrer (PhD, Media Arts and Sciences), Michael Baran (PhD, Media Arts and Sciences), Nicole Williams (PhD, Media Arts and Sciences), Vidyarani Dyaberi (MS, Computer Science), Jason Freeman (DMA), Jonathan Lee (DMA), Luke DuBois (DMA), Christopher Bailey (DMA), Akanksha Sharan (MS, Computer Science)

Other Professional Experience

- Panelist for federal and foundation grants and awards (2001-current).
- External reviewer for tenure cases, academic curricula, and unit/program reviews (2002-current).
- Co-Director, national workshop on Adaptive Life Long Learning for an Inclusive Innovation Economy, Washington DC, October 2019. (https://honorscollege.vt.edu/cdp/center/Workshop.html)
- Co-Director of the event "Emerge: artists and scientists redesign the future"; http://emerge.asu.edu March 2011; the event brought together artists, engineers, bio scientists, social scientists, story–tellers and designers to build, draw, write and rethink the future of the human species and the environments that we share. Guests presenters include: Neal Stephenson, Bruce Sterling, Sherry Turkle, Stewart Brand, Bruce Mau, Maria Bezaitis, Brian David Johnson, Julian Bleecker, Lee Hartwell, and Bruce Ritman. Event includes workshops, panels, keynote talks and festival activities.
- Co-Editor, IEEE Multimedia, Special Issue on Multisensory Experience through Multimedia (2004).
- Chair, New Technologies Day, 3rd World Summit on Media for Children (2001). Responsibilities included vision development, content selection, program implementation, staff supervision, securing sponsorships. (http://www.wsmcf.com/)
- Director, "Masterpieces of Electronic Music; a multimedia presentation", Lincoln Center Festival 2000, http://music.columbia.edu/masterpieces/ ; developed concept and headed implementation
- Director, Columbia University Interactive Arts Festival. (1999). (http://music.columbia.edu/fest99/); developed event concept and headed content selection and event implementation
- Director, 1997 International Computer Music Conference (ICMC97); opened the conference to the public attracting more than 10,000 people to the concerts; developed large exhibition hall component for the conference combing academic and industry exhibitors; secured total of $300,000 sponsorships; http://music.columbia.edu/~icmc97/
- Director, International Meeting on Physical Modeling, University of Thessaloniki (July 1995)
- Director, Delphi International Computer Music Conference and Festival, Greece (July 1992)

- Owner, Ichogramma; non-profit company created to support the development of the Institute of Psychoacoustics at the University of Thessaloniki; company also undertook the realization of the 1997 International Computing Music Conference ICMC97; 1992-2001
- Instructor, XoroRoes Modern Dance School; Athens, Greece; Seminars on probabilistic sound/movement interaction (1991-1992)
- Director, International Symposium on Psychoacoustics, Athens, Greece (June 1991)

Major Musical Instruments: Trumpet, piano, recorders.
Languages: English, Greek, French