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Academic Profile

Dr Andrea Nanetti

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Biography

Dr Andrea Nanetti received his university education in Historical Sciences between 1986 and 2000 in Italy (University of Bologna), France (University of Paris 1 Panthéon-Sorbonne and Paris 10 Nanterre), Germany (University of Cologne), Greece (National Hellenic Research Foundation), and USA (Brown University), where he has been instructed by world's leading professors to work on research questions and solutions through the cross-fertilization of different methodologies (historical, philological, diplomatic, aesthetic, anthropological, and computational). He pioneered digital humanities projects for archival documents (1997-1999 State Archive in Venice and 2005-2010 State Archive in Ravenna), chronicles (2002-2004 Virtual Library of Venetian Chronicles), historical maps (2000, Imola from Leonardo da Vinci to today), and pre-modern historical primary sources (2007-today, cloud platform for Afro-Eurasia).

His academic research has been supported by his entrepreneurial experience, which started in 2001, when he was awarded a prize in the "StartCup" of the University of Bologna and the General Confederation of the Italian Industry (the first Italian business plan competition devoted to projects with high content of knowledge) to establish Meduproject Pte Ltd. In 2002 the company was founded as a spin off of the University of Bologna focused on projects at the interface of cultural heritage and S&T: access to heritage, networking of conservation-restoration experts, and support to heritage management (advisor to public and private institutions in strategic decisions). Since 2008 the company manages and supports the web platforms of Andrea Nanetti's main research project called Engineering Historical Memory (EHM), which thrives on meeting the next challenge in developing and testing old and new sets of shared conceptualizations and formal specifications for heritage data management systems. The presentation of the results of the project was awarded best conference paper at 2013 Culture and Computing (Kyoto, Japan), and has been funded, among others, by Microsoft Research (2014-2017).

Since 1996, he has published 20 multilingual books (13 single authored, present in distinguished libraries around the world), 2 edited journals, and over 70 essays in scientific journals and books in English, Italian, Chinese, Spanish and Modern Greek on intercontinental trade-conflict-diplomacy relationships (Afro-Eurasia ca. 1100-1500), national art-heritage-politics relationships (Italy, Greece, and China 19th-20th centuries); territorial man-heritage-landscape systems (Imola 403-1789, and Venetian Messenia 1209-1500 & 1684-1718), and, more recently, cultural and biological heritage systems in human interpretation of the external world (seen as artificial intelligence amplification ante litteram). Dr Nanetti is currently playing multiple editorial roles including the 'Committee for the Publication of the Sources for the History of Venice' since 2000. He was the Founding Co-Chair of the Singapore Heritage Science Conference series (2014-) and a member of numerous Conference Committees including the 'International Conference on Culture and Computing', VSMM, SOTICS, and CCS.

Dr Nanetti lives with his family in Singapore, in the Nanyang Technological University campus, where he serves as Tenured Associate Professor and Associate Chair (Research) at the School of Art, Design and Media, as Senior Researcher in the Complexity Institute, with a courtesy appointment at the School of Humanities. At NTU he is also a Faculty Member of the University Scholarly Programme and of the MSc in Technopreneurship and Innovation Programme. Internationally he serves the domain of heritage science as Founding Co-Director (International Relations) of the International Research Centre for Architectural Heritage Conservation at Shanghai Jiao Tong University, and as Founding Member of the Board of Directors of the Maniatakeion Foundation (Athens, Greece).

Research Interests

Dr Andrea Nanetti—as a scholar, who started his research vocation in historical studies at the advent of computer operating systems with graphical user interfaces—has always been fascinated by the exponential growth of interdependencies between artificial actions (i.e., human made) and computational operations (i.e., completed by electronic devices able to store and process data, typically in binary form, according to instructions given to them in a variable program or machine learning, which allows algorithms to learn through experience, and do things that we are not able to program). With this interest, he is proposing the theoretical need to direct traditional disciplinary knowledge toward a formal science of heritage (i.e., the treasure of human experiences), which will focus on how data and information—now encoded in complex interactions of written, pictorial, sculptural, architectural, and digital records, oral memories, practices, and performed rituals—may be inherited by machine learning algorithms. This state-of-the-art science pioneers integrated action plans and solutions in response to, and in anticipation of, the exponential growth of emerging needs in our increasingly complex human society. In practice, the research uses multidisciplinary and trans-disciplinary methods to identify case studies for interdisciplinary and cross-disciplinary teamwork investigations.

Since 2007, Dr Nanetti's main research project is EHM-Engineering Historical Memory (http://www.engineeringhistoricalmemory.com, since 2015 on Microsoft Azure). EHM is both an experimental methodology and an ongoing research project for the organization of historical information in the machine learning age. He first theorized it as a Visiting Scholar at Princeton University in 2007. Since his arrival at NTU in 2013, Dr Nanetti has been working on the globalisation of his research interests. Starting from his background studies on the world as seen from Venice through its chronicles and diaries (1205-1433) and world maps (e.g. Fra Mauro), he opened the range of the investigation of other coeval historiographical traditions, in Chinese, Greek, Russian, Persian, and Arab. EHM develops and tests new sets of shared conceptualizations and formal specifications for content management systems in the domain of the Digital Humanities, with a focus on how to engineer the treasure of human experiences and serve decision making, knowledge transmission, and visionaries. In practice, his research develops and applies computationally intensive techniques (e.g., pattern recognition, data mining, machine learning algorithms derived from other disciplines, knowledge aggregators, interactive and visualization solutions). From a theory point of view, EHM focuses on history of historiography and studies new ontologies for the semantic web, inspired by Derrida's notion of trace, Ginzburg's "thread and traces" theory, and last but not least Umberto Eco's semiotics (e.g., 2007 'Dall'Albero al Labirinto', published in 2015 as 'From the Tree to the Labyrinth').

In his long-term strategic fit at the NTU Singapore School of Art, Design and Media, Dr Nanetti is designing and engineering a new generation of knowledge aggregators for immersive spaces to test how interactive media and AI can share the century-old experiences of Arts and Humanities with Sciences. In this intellectual framework in 2017 Dr Nanetti initiated an interdisciplinary project to revitalise the social nature of learning experiences from a transcultural perspective. The project is called "Dancing over Ideas of Research". D.A.N.C.I.N.G. identifies the knowledge aggregation process (Definition, Assumption, Notion, Concept, Interpretation, Narrative, Gamut), which uses AI in immersive spaces to augment and expand the human capacity to discuss complex ideas (i.e., ways of seeing and representing reality) and ultimately facilitate solutions to the 21st century grand challenges.

Current Projects

- 3D animated solutions for the study and publication of science and technology manuscripts. The Martini's "Treatise on Architecture" annotated by Leonardo da Vinci as a showcase.
- Accelerating the Knowledge Turn from Graphene Research to Innovative Technology
- Augmenting Bing Search through Automatic Narratives in the Interactive Global Histories
- Data Consolidation for Interactive Global Histories (1205-1533) within the NTU National and International Research Network: Towards an NTU Interdisciplinary Laboratory for Data-Driven Agent-Based Modelling and Simulations for Historical Sciences.
- Engineering Historical Memory. Interactive Global Histories 1205-1533 As A Scalable Case Study
- MEG/ Museum Experience Guide
- Maritime Silk Road. Past, Present and Future. A projection mapping concept design project
- 'Animated Installations And Other Creative Solutions To Increase Cultural Heritage Experiences In The Underground Time Corridor Of XIXIA Tomb Museum (Yinchuan, Ningxia Hui autonomous Region, PRC)'

Selected Publications

- Nanetti A., D. Benvenuti. (2019). Animation of two-dimensional pictorial works into multipurpose three-dimensional objects. The Atlas of the Ships of the Known World depicted in the 1460 Fra Mauro's mappa mundi as a showcase. *SCIRES-IT (SCIentific RESearch and Information Technology)*, 9(2), 29-46.
- BERTOCCI, S., BIGONGIARI, M., NANETTI, A., BENVENUTI, D. (2019). The UID Symposium on Research Internationalisation. Cultural Heritage, Architecture, Landscape and Design between Research and Teaching Experiences: Digital Documentation and 3D Reconstruction of the Laur. Cod. Ash. 361 (Treatise on Civil and Military Architecture by Francesco di Giorgio Martini). *The UID Symposium on Research Internationalisation. Cultural Heritage, Architecture, Landscape and Design between Research and Teaching Experiences* (pp. 200-205)Florence: DidaPress University of Florence.
- NANETTI, A.(2019). The Third Paradise at NTU Singapore. *Michelangelo PISTOLETTO, Between Obverse and Reverse, [Catalogue of the Exhibition, Partners and Mucciaccia, Singapore, 19 January – 27 July 2019]* (70-74). Rome: Carlo Cambi Editore.
- NANETTI, A and CHEONG, S. A. (2019). Proceedings of Yonsei University and NTU Singapore Joint Faculty Symposium on "Humanities in Society" (Singapore, NTU, School of Humanities, 11-13 January 2018): 전산 역사학: 빅 데이터에서 빅 시뮬레이션까지 [Computational History: From Big Data to Big Simulations]. *Humanities in Society* (pp. 131-175)서울 [Seoul, South Korea]: 연세대학교 [Yonsei University Press].
- NANETTI, A. (2019). The Gingko Meeting (Vienna, 17th September 2018): Expanding the thinkable future beyond inherited pasts and visible presents. *From arts to cosmology, from music to complexity: the Gingko meeting* (pp. 20-21)Vienna: Complexity Science Hub, Michal B. Paradowski.

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