

C.V.

Amani Helmi El Rayes	
Major	Computer Science
Minor	Modeling
Current position	<ul style="list-style-type: none"> • Professor Emeritus and PI of North Africa Applied Systems Analysis Center (NAASAC)
Previous positions	<ul style="list-style-type: none"> • Vice President of INP for Training & Consultations and Community Affairs (2019-2022) • Director of Planning Techniques Center (2014-2019) • (Demonstrator - Assistant Teacher - Lecturer - Assistant Professor - Professor) (1986-1993-2000-2006-2013)
Academic Qualifications	<ul style="list-style-type: none"> • Ph.D. in Computer Science - October 2000. School of Computer Science, University of Birmingham, United Kingdom. • M. Sc. in Pure Mathematics - May 1993. Faculty of Science - Ain Shams University- Cairo - Egypt. • B.Sc. in Mathematical Statistics with Very Good Grade- May 1983. Faculty of Science – Ain Shams University- Cairo - Egypt. • Diploma in Planning and Development – Institute of National Planning (INP) - Cairo- Egypt 1987.
Major experiences	<ul style="list-style-type: none"> • PI of North Africa Applied Systems Analysis Center (NAASAC) • Member of the Council for Future Studies and Risk Management - The Academy of Scientific Research (2018-2021) & (2025 - ...) • Member of the Committee for activating cooperation between the Academy of Scientific Research and IIASA (Austria) (2019-now) • Coordinator of the conference of Cairo Demographic Center, December 2012. • Guest researcher at Bergen University, Norway. (July 2008 – December 2008) • Facilitator's assistant in workshops on' The gender integration in the national planning for development held in the Egyptian governorates and organized by the National Council for Women and UNFPA. (2005-2006) • Post-doctoral researcher at University of Birmingham, United Kingdom (June 2005- November 2005) • Member of the completed project Stochastic Modelling and Verification. A British-German Academic Research Collaboration project between the Universities of Bonn (previously Mannheim), Erlangen-Nürnberg, Birmingham, and Edinburgh. (1998-2000)
Research	<p>A) Textbooks:</p> <ul style="list-style-type: none"> - Systems Thinking to Support Arab Sustainable Development Policies – In Light of Global Experiences. Institute of National Planning 2025. - Higher Education and Research in Egypt. Amani El Rayes and Hosam El

Emam. Chapter in Book "Shaping Research Universities in the Nile Basin Countries. Mary Mwiandi, Kassahun Berhanu and Tor Halvorsen (editors). University of Bergen. Fountain Publishers 2010.

B) Team Research:

- Enhancing Egypt's Food System Resilience Case Study on Wheat System. Egyptian Journal of Agricultural Economics. Vol (43), number (3). September 2024.
- Decent Life Initiative and Sustainable Development Goals: A Systems Thinking Approach, *Systems* 2023, 11, 446. <https://doi.org/10.3390/systems11090446>
- Cordial labeling of corona product between paths and fourth power of paths. Iranian Journal of Mathematical Sciences and Informatics. (2020).
- The Signed Product Cordial for Corona of Paths and Fourth Power of Paths. International Journal of Mathematical Combinatorics 4 (2019): 102-111.
- The Cordiality of the Sum and Union of the Fourth Power of Paths with Cycles. Journal of Mathematics and Statistical Science.
- Signed Product Cordial of the Sum and Union of Two Fourth Power of Paths and Cycles. Journal of Machine Learning Research 4.4 (2019): 45-50.
- Analytical Study of Egypt's position in Intra-Arab Trade using Network Analysis. Planning and Development issues series number (290). June 2018. (in Arabic)
- Prerequisites for a Transition into Knowledge Based Economy in Egypt. Planning and Development issues series number (277). July 2017. (in Arabic)
- Towards an Integrated Framework to measure and study the Impact of Sustainable Development Goals post- 2015 on the Sustainable Development in Egypt during the period 2016-2030. Planning and Development issues series number (268). July 2016. (in Arabic)
- Developing Data Quality in Egypt. Planning and Development issues series number (232). January 2012. (in Arabic)
- Towards an optimal mix of energy in Egypt. Planning and Development issues series number (227). September 2010. (in Arabic)
- Using PEPA to Model the Unemployment Problem. Case Study Egypt. With Ann Nosseir. INP Memo number (1646), Institute of National Planning. September 2010.
- Development of Cross Border Trade among Nile Basin Countries. A Scoping Study. Nile Basin Initiative, Socio-Economic Development and Benefit Sharing Project. Institute of National Planning and Nile Basin Initiative. July 2007.
- Using the Probabilistic Model Checker PRISM to analyze Credit Card Use. With Mevlイヤr Er. In The Electronic Journal Information Systems Evaluation (EJISE) Volume 11 Issue 1, pp. 7 - 16, 2008, available online at www.ejise.com.

- A Complete Strategy for Higher Education. Amani El Rayes and Others. Planning and Development issues series. November 2004. (in Arabic)
- Determine the Financial needs for Higher Education. Amani El Rayes and Others. Planning and Development issues series no. 165- July 2003. (in Arabic)
- Estimating the Financial needs for Pre-University Education according to a multi-dimension strategy. Amani El Rayes and Others. Planning and Development issues series no. 155- July 2002. (in Arabic)
- Developing a new technique to measure the optimum use of water in Egypt (Second Phase). Amani El Rayes and Others. Planning and Development issues series no. 148- 2002. (in Arabic)
- The factors which determine the economic growth in theory and in actual Egyptian economy. Planning and Development issues series no. 167- 2003. (in Arabic)
- Solving Infinite Stochastic Process Algebra Models through Matrix-Geometric Methods. With M. Kwiatkowska and G. Norman. In J. Hillston and M. Silva, editors, Proceedings of the Seventh Annual Workshop on Process Algebra and Performance Modelling (PAPM'99), pages 41-62, Zaragoza, Spain, September 1999. University of Zaragoza Press.
- Available at: <http://citeseer.ist.psu.edu/267119.htm>
- Analysing Performance of Lift Systems in PEPA. With M. Kwiatkowska and S. Minton. In the 12th UK Computer and Telecommunications Performance Engineering Workshop, pages 83-100, University of Edinburgh, 1996.
- Available at: <http://citeseer.ist.psu.edu/146900.html>

C) Individual Research:

- Mechanisms for the rise of the digital economy in the economies of emerging countries. In the 42nd Al-Baraka Forum for Islamic Economics, under the title "Digital Economy and Foresight". April 20-21, 2022. Medina. Kingdom of Saudi Arabia.
- Using Network Analysis Technique for studying Societal Trends on Social Networks-Application to assess the turnout of the official and private media on Social Media Networks. INP Memo number (1655), Institute of National Planning. December 2015. (in Arabic).
- About concepts and indices of knowledge economy. (Some international experiments and the Egyptian case). INP Memo number (1634), Institute of National Planning. September 2007. (Arabic).
- Evaluating the Lightweight Currency System using the Probabilistic Model Checking PRISM. INP Memo number (1631), Institute of National Planning. March 2006.
- Analysing Reliability of an Industrial System using Stochastic Process Algebra. International Journal of Intelligent Computing and Information Science Volume5, Number 2, July 2005.
- Agent Modelling: A Literature Survey. In 28th International Conference for Statistics, Computer Science and its Applications, Cairo, Egypt. April 2003.

Areas of interest	• Network Analysis, Knowledge-Based Economy
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Google scholar	https://scholar.google.com/citations?user=Sug9wh8AAAAJ&hl=en