Peter Martey Addo, PhD

General Information

LinkedIn: http://fr.linkedin.com/in/petermarteyaddo

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Core Competencies

I can help generate new ideas, innovation and improve growth.

- Foresight & Strategy: Provide understanding of the potential of unleashing data & emerging technologies to improve growth.
- Lead Interdisciplinary Teams: Experimentations, Research & Innovation.
- Partnerships: Establishing the right partners to address key challenges.

Research Interest

Machine & Deep Learning (Data Science & Knowledge discovery), Econometrics, Applied Statistics & Computational finance, Macro-financial linkages, Financial Networks & Systemic Risk Analysis, Nonlinear Time Series Analysis, Interdisciplinary Research (Statistical Physics & Econometrics)

Programming Language & Applications : R, H2O, Python, Spark, SPSS, Stata, Matlab, Tableau, Talend, Gretl, LaTeX (Kile on Linux)

Current Position

Senior Data Scientist, Head of DataLab

French Development Agency (AFD), Headquarters, Paris, France April 2018 - Present

- Contributed to several innovative initiatives, exchanges, and improvement in visibility of Groupe AFD on themes of data & emerging technologies for development through leading the implementation of AFD initiatives, publications, participation in global events virtual forums, online conference, virtual workshops), dialogues with experts and practitioners.
- Contributed to advancing the responsible adoption of data and tech for economic and social well-being of people. Achieved though engagement with partners, dialogues with top management & key stakeholders, participation in expert working groups, advisory on project steering committees at AFD, and sharing thoughts to help direct investments.
- Lead on Strategic Investments on data collaboratives and Tech for sustainable development. Contributed to the implementation of innovative projects (like DATA4COVID19 Africa Challenge; AI Research Challenge on Biodiversity)
- Engaged in discussions with partners, and joined in knowledge sharing on data innovation for development.
- Contribution to the strategic innovation roadmap at AFD.

Researcher

LabEx ReFi - European Laboratory on Financial Regulation, France Jan 2015 - Present

- Research Department: Systemic Risk, Resolution and Growth
- Research Group: "Fintech and Financial Regulation" (BigData, Bitcoin & Blockchain, High Frequency Trading).

Previous Position

Data Scientist (Lead)

SNCF Mobilité - Departement Performance Maintenance, Direction du Matériel, France
Jan 2016 - Mar 2018

- Innovation, Data Science & Artificial Intelligence (AI) Projects (USE CASES)
- Lead at Data Science Lab, Division Innovation & Data
- Selected UseCases (done):
  - Quick-Win Security: An ELK-based solution to boost performance of Security department in terms of searching for the right information and analysis. *"Projet QW Sécurité"*
  - Real-time Monitoring and Anomalie detection on train mileage. *"Projet KM Tracker"*
  - Graph-based Recommendation Search Engine. *"Projet La Bonne Piéce - Eureka"*
  - Visual Recognition Search Engine & Image data management: help maintenance agents find information on train parts.
  - Handwritten OCR detection & Search Engine on the mechanical drawings of trains

Postdoctoral Research Fellow (CNRS–UMR8174)

Centre National de la Recherche Scientifique (CNRS) Sept 2014 - Dec 2015

- Part of a research team tasked on some working packages of the European Union Systemic risk project: "SYstemic Risk TOmography: Signals, Measurements, Transmission Channels, and Policy Interventions" (SYRTO) Project.
- Understanding the risks of Sovereigns, banks and other financial intermediaries and corporate
- Exploring the bi-variate risk connections among the system Sovereigns-Banks and other Intermediaries-Corporates.
- Proposing new measurement approaches and indicators for systemic risks.
- Exploring the multidimensional risk connections among Sovereigns, Banks and other Intermediaries and Corporates.
- Preparing research manuscripts for journal submission.
- Representing the team in international conferences, and invited seminar presentations

Research Assistant

Systemic Risk Hub global team Sept 2014 - Dec 2015

Research Fellow

Erasmus Mundus - EACEA Sept 2011 - Aug 2014

- Worked on a project aimed at the analysis of nonlinearity in business cycles. Special attention was centred on the introduction of modern nonlinear approaches for the analysis of economic & financial time series.
- I was affiliated with the Centre d'Économie de la Sorbonne (CES) – Université Paris 1, Panthéon-Sorbonne, France, and the Dipartimento di Economia, Università Cà Foscari di Venezia, Italy.

Education

Diplôme de Docteur en Mathématiques (Ph.D in Mathematics)

Université Paris 1 Panthéon Sorbonne, France — Sept 2011 - May 2014

Dottore di Ricerca in Economia (Ph.D in Economics)

University Cá Foscari of Venice, Italy (`Joint PhD degree (Erasmus Mundus) with Univ. of Paris 1`)

Master Mathematiques Appliquees a l'Economie et a la Finance

spécialité Modelisation et Methodes Mathmatiques en Economie et Finance, **mention**: *Trés Bien*.

Université Paris 1 Panthéon Sorbonne, France — Sept 2009 - July 2011

Laurea Magistrale in Economia (Master in Economics), **mention**: *110/110 Cum Laude*

University Cá Foscari of Venice, Italy — Sept 2009 - June 2011

Bachelor of Science in Mathematics, **Class of Degree:** *First Class Honors*

Kwame Nkrumah University of Science and Technology, Ghana. — Aug 2004 - June 2008.

Selected Publications

1. *"Building Data Infrastructure In Development Contexts: Lessons From The Data4covid19 Africa Challenge"*, AFD Edition – A QUESTION OF DEVELOPMENT (QDD), No 56, March **2022**. . (joint with Stefaan G. V., Andrew Y., Andrew J. Z.)

2. *"Exploring Nonlinearity on the CO2 Emissions, Economic Production and Energy Use Nexus: A Causal Discovery Approach"*, Energy Reports, Volume 7, Pages 6196–6204, November **2021**. https://doi.org/10.1016/j.egyr.2021.09.026. (joint with McIsaac, F. , Manibialoa, C.)

3. *"Emerging Uses Of Technology For Development: A New Intelligence Paradigm"*, AFD Policy Paper no 6, Feb **2021**. https://www.afd.fr/en/technology-development-new-intelligence-paradigm-addo-baumann-mcmurren-verhulst-young-zahuranec. (joint with Dominik B., Juliet M., Stefaan G. V., Andrew Y., Andrew J. Z.)

4. *"Credit Risk Analysis Using Machine and Deep Learning Models"*, Risks, 6(2), 38, April **2018**. https://doi.org/10.3390/risks6020038. (joint with Hassani, B., Guégan, D.)

5. *"Nonlinear Dynamics and Recurrence Plots for Detecting Financial Crisis"*, The North-American Journal of Economics and Finance, Volume 26, December **2013**, Pages 416–435. http://dx.doi.org/10.1016/j.najef.2013.02.014. (joint with Billio, M., Guégan, D.)

6. *"The Univariate MT-STAR Model and a new linearity and unit root test procedure"*. Computational Statistics & Data Analysis (CSDA), Volume 76, August **2014**, Pages 4–19. http://dx.doi.org/10.1016/j.csda.2013.12.009. (joint with Billio, M., Guégan, D.)

7. *"Turning point chronology for the Euro–Zone: A Distance Plot Approach"*. OECD Journal: Journal of Business Cycle Measurement & Analysis, Vol. **2014**/1, No. 8, pages 1–14. http://dx.doi.org/10.1787/jbcma-2014-5jxwz80d73q8. (joint with Billio, M., Guégan, D.)

8. *"Nonlinear Dynamics and Wavelets for Business Cycle Analysis"*. In Marco Gallegati and Willi Semmler (Eds.), "Wavelets Applications in Economics and Finance", Dynamic Modeling and Econometrics in Economics and Finance Volume 20, **2014**, pages 73–100. Springer Series. http://dx.doi.org/10.1007/978-3-319-07061-2_4. (joint with Billio, M., Guégan, D.)

9. *"Understanding exchange rate dynamics"*, In A. Colubi, K. Fokianos, & E. J. Kontoghiorghes (Eds.), Proceedings of the 20th International Conference on Computational Statistics, pp. 1–14, **2012**. Curran Associates, Inc. ISBN: 978-1-62748-321-6. (joint with Billio, M., Guégan, D.)

Selected Working Papers

1. "Coupling direction of the European Banking and Insurance sectors using inter-system recurrence networks", CES Working paper, **2015**.

2. "Insights to the European debt crisis using recurrence quantification and network analysis", CES Working paper 2015.35, **2015**.

3. "The kiss of information theory that captures systemic risk", CES Working paper no. 14069R, **2015**. (joint with de Peretti P., Runge J., Gatfaoui H.)

4. *"Multivariate Self–Exciting Threshold Autoregressive Models with eXogenous Input"*. Papers 1407.7738, arXiv.org (**2014**)

5. "Change-Point Detection and Bayesian Graphical Models for Vector Signals". (joint with Ahelegbey, D. F.).

Selected Conference and Seminar Presentations

1. Global Digital Development Forum 2022, Session on "Data4COVID19 Africa Challenge: Lessons Learned", May 4, 2022.

2. Session on "Responsible re-use of data for development through data collaboration" UNCTAD eCommerce Week 2022 - April 28, 2022. (OECD, UNDP, Govlab)

3. OECD D4D Annual Meeting - Data for Development community, "DATA4COVID19 Africa Challenge", 3rd Meeting of the OECD DAC Data for Development, February 25, 2022

4. Keynote speaker : "Data Science, Intelligence Artificielle et applications : quelles contributions au développement économique et social ?" at Colloque International 2021 organised by Université Jean Lorougnon Guédé, Côte d'Ivoire. 16 Dec, 2021. https://colloque.ujlog.ci

5. "Artificial intelligence (AI) and developing-country science and bilateral cooperation". OECD workshop on AI and the productivity of science, 29 October – 5 November, 2021.

6. "IA et développement local et international" Colloque Intelligence artificielle et innovation sociale à Bordeaux, 17-18 Juin, 2021.

7. Session "AI Systems Classification Framework: progress, challenges, way forward", OECD International Conference on AI in Work, Innovation, Productivity and Skills, 1-5 February 2021.

8. "The role of data governance in better managing COVID-19 spread (data collection, protection management)." Next Einstein Forum - Global Gathering (NEF-GG) , 8-10 December 2020.

9. Big Data & Artificial Intelligence : Risks, Challenges and Applications, Suptech workshop, ACPR, Paris, France, 21 March **2019**.
10. Systemic Risk Group, Frankfurt Institute for Advanced Studies (FIAS) , June 12th **2015**, Frankfurt, Germany,.
11. Meeting of the Consortium for Systemic Risk Analytics (CSRA), Massachusetts Institute of Technology (MIT) in Cambridge, Massachusetts on May 27 th **2015**, USA.
12. Meeting of the Consortium for Systemic Risk Analytics (CSRA), Massachusetts Institute of Technology (MIT) in Cambridge, Massachusetts on December 15 th **2014**, USA.
13. 34th International Symposium on Forecasting (ISF 2014), Rotterdam, Netherlands, June 29 – July 2, **2014**.
14. 7th CSDA International Conference on Computational and Financial Econometrics (CFE 2013), Senate House, University of London, UK, 14–16 December **2013**.
15. 6th CSDA International Conference on Computational and Financial Econometrics (CFE 2012), Conference Centre Oviedo, Spain, 1–3 December **2012**.
16. 20th International Conference on Computational Statistics (COMPSTAT 2012), Amathus Beach Hotel, Limassol, Cyprus, 27–31 August **2012**.
17. Econometrics Internal Seminar at the *Center for Operations Research and Econometrics* (CORE), Université Catholique de Louvain (UCL), Louvain-La-Neuve, Belgium, 30 May, **2012**.
18. Fifth International MAF 2012 Conference – Mathematical and Statistical Methods for Actuarial Sciences and Finance, Venice, Italy, 10–12 April, **2012**.
19. Second International Symposium in Computational Economics and Finance (ISCEF 2012), El Mouradi Gammarth, Tunis, Tunisia, March 15–17, **2012**.
20. 5th CSDA International Conference on Computational and Financial Econometrics (CFE 2011), Senate House, University of London, UK, 17–19 December **2011**.
21. Université Paris 1, Panthéon Sorbonne, Maison des Sciences Economiques (MSE), MMEF-QEM-EDEEM Graduation Ceremony (2011), Chaired by Edward C. Prescott, July 8, **2011**.

Teaching

1. **Special Lectures, Universitas Pembangunan Nasional Veteran Jakarta (UPNVJ), Indonesia**

   Econometrics and Data Analysis - Econometrics 2, Econometrics 1, Introduction to Data Science for Economists, *Economics Department* **2021, 2022**.

2. **Instructor, Université Paris 1, Panthéon-Sorbonne, France**

   R for Statistical Modelling in Finance, *Summer School on Statistical and Numerical Finance*, June–July, **2012** & **2013**.

3. **Teaching Assistant, Department of Mathematics, KNUST, Ghana**

   Probability and Statistics II, Design of Experiments, Statistics for Computer Science I, Biological Sciences, Spring **2009**. Regression Analysis, Probability and Statistics I, Fall **2008**.

Professional Activities & Networks

- **Reviewer** for *Economic Modelling*, *Studies in Nonlinear Dynamics & Econometrics*, *Journal of Business Cycle Measurement & Analysis*, *Computational Economics*. *South African Journal of Economics*.
- **Professional Networks**: *Member, OECD AI Expert Network (ONE AI), 2020–Present. Member, SNCF SYNAPSES: SNCF Network of Scientific & Technical Experts , July 2017–April 2018. Member, Systemic Risk Hub global team, April 2015–Present. Member, ERCIM WG on Computational and Methodological Statistics (CMStatistics), 2013–Present. Member, Computational and Financial Econometrics Network (CFEnetwork), 2013–Present. Member, International Institute of Forecasters (IIF), April 2014–Present. Member, Euro Area Business Cycle Network (EABCN), 2013–Present. Member, The Statistics and Probability African Society (SPAS), 2012–Present. Member, Erasmus Mundus Students and Alumni Association (EMA), 2009–Present.*
- **Co-organiser of PhD student lunch seminars**, Axe Finance at CES, Université Paris 1, Panthéon-Sorbonne, France, 2015.
- EMA **Course Representative**: European Doctorate in Economics–Erasmus Mundus (EDEEM), 2012–2013, 2014–2015.
- **Co-Initiator** and Management team member of the EMA PhD Network, 2012–2013.
- **Vice-President**, QEM Erasmus Mundus Students and Alumni Association, 2012–2013.
- **President**, QEM Erasmus Mundus Students and Alumni Association, 2013–2014, 2015–2016.

Honors, Awards, & Fellowships

- Member of *"Synapses: SNCF Network of Experts"* — 2017
- Prix de Sécurité *"Projet QW Sécurité"*, SNCF IT4Change Awards — 2016
- "Qualifiés 2015 aux fonctions de maître de conférences":
  Section 05 (Economics) and Section 26 (Applied Mathematics), CNU, France — 2015
- CNRS, SYRTO Postdoctoral Fellowship — 2014 - 2015
- Erasmus Mundus Doctoral Fellowship — 2011 - 2014
- Erasmus Mundus Scholarship for QEM Master — 2009 - 2011
- First Class Honors, BSc. Mathematics KNUST — June, 2008
- Best Students Award, College of Science KNUST — June, 2007
- Leadership Awards, Church of Christ KNUST — 2006, 2007, and 2008

Miscellaneous

- Languages : English (Native), French (Intermediate), Italian (Intermediate), Spanish (basic).
- Other Skills :
  - Ability to analyse and synthesize large amounts of information and data
  - Ability to solve complex problems and find creative solutions
  - Strong sense of urgency and ability to work under pressure
  - Ability to cope with unexpected results and to bring new perspectives to move ahead
  - Communicate complex information to a range of audiences
  - Outstanding work ethics and team work skills
  - Curious, innovative and open-minded
  - Work independently with minimal supervision and ability to make decisions

Last updated: May 4, 2022