



## Network Models for Financial Technologies

Financial Technology (FinTech) denote novel financial services that are enabled by (on-line) innovative technologies. Advances in big data and big data modelling (data science) have enabled FinTechs to provide very competitive (e.g. engaging, fast and cheaper) financial services.

More competitive services may bring, however, higher risks to the consumers: the most important ones are cyber risks (the risks of financial losses due to operational failures in the IT systems) and information risks the risks that consumers' choices may be misguided by wrong information, in terms of credit rating, asset allocation or cryptocurrency prices.

Both cyber risks and information risks are amplified by systemic risk, due to the "native" high interconnectdness of Fintech companies.

The current research aim of our data science laboratory is to improve data science methodologies and, specifically, to develop statistical models to extract valuable information from correlation, social and transactional network data between individuals and institutions. This to improve the information given to the consumers, requesting for credit, investments or blockchain transactions.

Specifically: in the field of peer to peer lending we improve credit rating based on generalised linear models with network centrality measures; in the field of robot advisory we improve the match between the expected and the actual risk profile of investments using a combination of cluster analysis and neural network models; in the field of cryptocurrencies we improve price predictions extending Vector Autoregressive models with correlation networks.

\* The data science laboratory currently involves Paolo Giudici (Professor) Paola Cerchiello (Assistant Professor), Giancarlo Nicola (Third year PhD funded by RES), Branka Hadji-Misheva (Second year Phd funded by SIRTl), Gloria Polinesi (second year Phd), Kamonchai Rujirarangsarn (Phd), Paolo Pagnottoni (Phd funded by CREVAL), Anca Toma (Phd), Paritosh Jha (Phd funded by MEDIOLANUM)

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