DATA-DRIVEN BUSINESS AND BEHAVIOUR ANALYTICS

THE UNIVERSITY of EDINBURGH

ACADEMIC YEAR 2023/2024

TEAM

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MATERIAL AND INFO

LEARN ULTRA

https://opencourse.inf.ed.ac.uk/dbba

TUTORIALS

Weekly tutorials from week 3 - **in person**

Students are expected to attempt the exercises **before attending the tutorial**

COURSEWORK

Two assignments (25% each of final marks)

First assignment issued on week 4, deadline week 7

Second assignment issued on week 7, deadline week 11

Exact dates will be available on the websites

EXAM

50% of final marks

Exam diet: december

More details later this term

MATERIAL

Main textbook for the first part:

Menczer, Fortunato, Davies - A first course in network science

Another good book is:

Barabasi - Network Science (Available for free at www.networksciencebook.com)

Main textbook for the second part:

Delli Gatti et al. - Agent-Based Models for Economics: a Toolkit

Supplementary material will be provided when needed

PIAZZA

Accessible from:
LEARN and opencourse

Primary use: Discussion for students

PROBLEMS?
QUESTIONS?

If about current lecture, ask in class

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If about exercises, ask on Piazza **after** the relevant tutorial

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If about anything else ask on Piazza

If about exercises, ask on Piazza **after** the relevant tutorial

If about coursework: ask on Piazza, the **TA** or the **lecturer** will answer

HOW TO SUCCESSFULLY TAKE THIS COURSE

Engage during lectures

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Engage during lectures

Interact with other students

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Engage during lectures

Interact with other students

Learn how to solve problems

LEARNING OUTCOMES

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4) Discuss the legal and **ethical implications** of working with human-related data.

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4) Discuss the legal and **ethical implications** of working with human-related data.

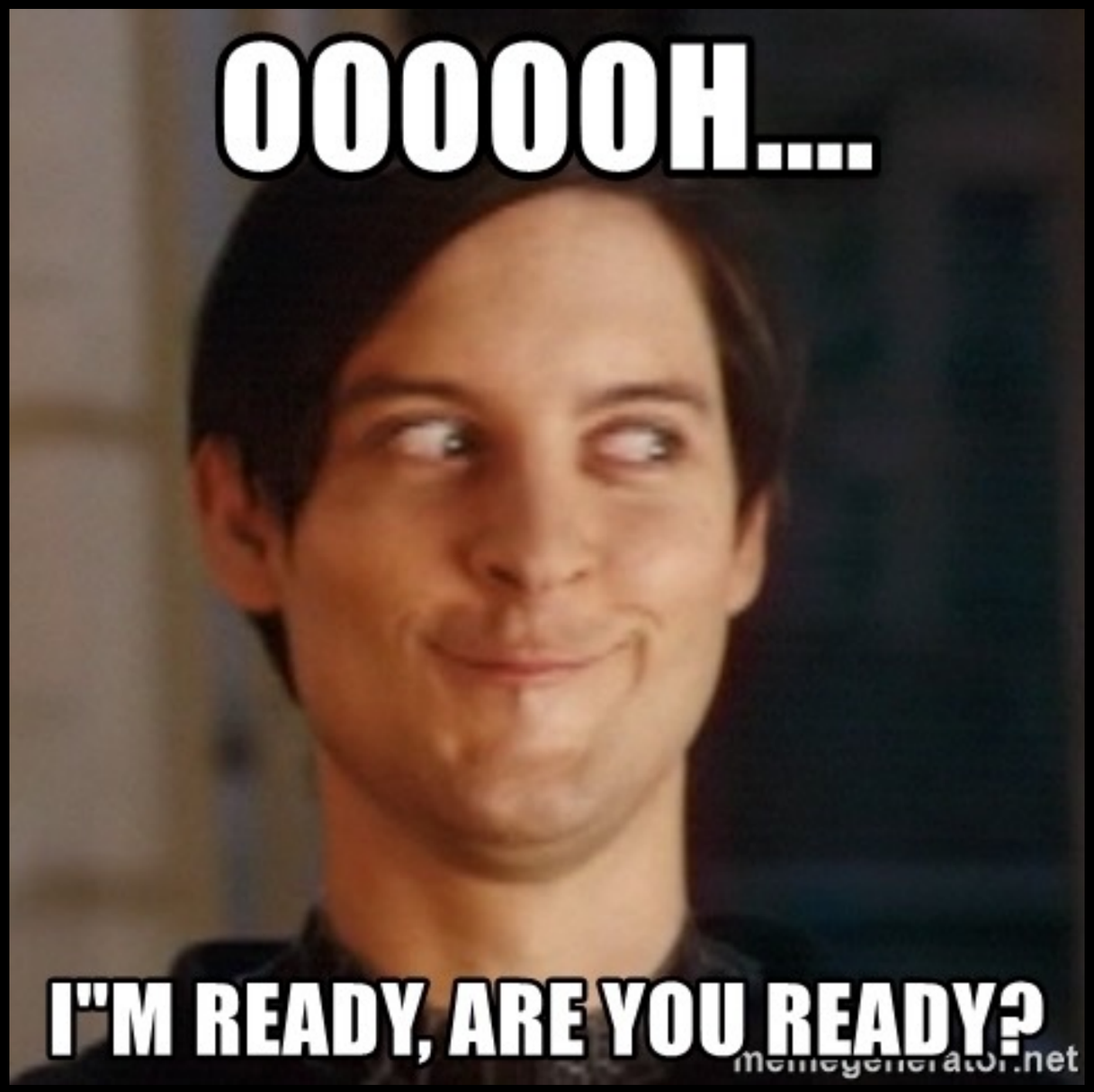
5) **Present** (written/oral) **highly interdisciplinary work** in an understandable and comprehensive manner to people with different backgrounds.

COURSE OVERVIEW

Learn about (socio-economic) **complex systems**

Networks and social networks

Agent-based models and simulations


OOOOOH....
I"M READY, ARE YOU READY?
memegenerator.net

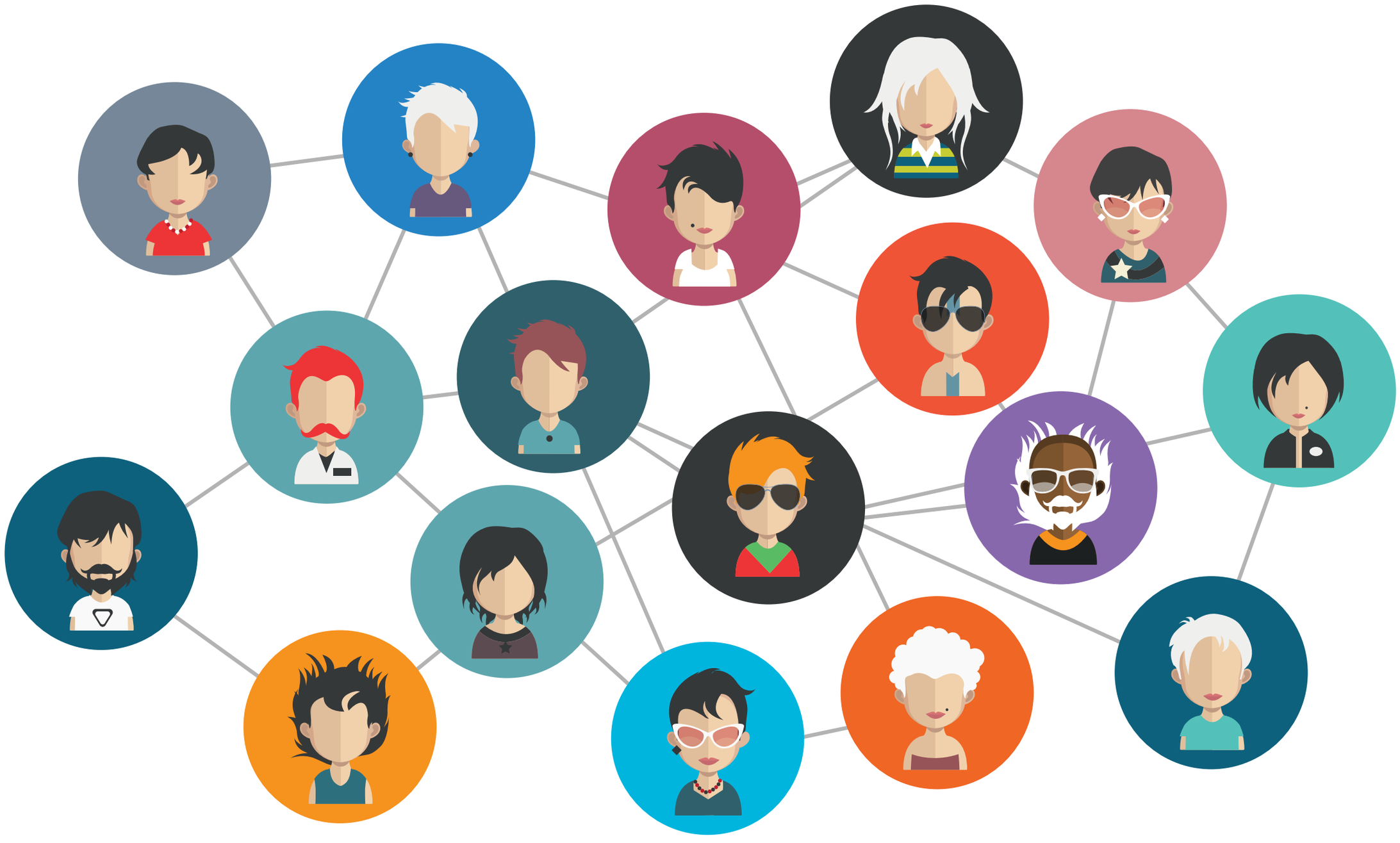
COMPLEX SYSTEMS

"I THINK THIS CENTURY WILL BE THE CENTURY OF COMPLEXITY."

STEPHEN HAWKING

WHAT ARE COMPLEX SYSTEM?

SOCIO-ECONOMIC COMPLEX SYSTEMS



TWO APPROACHES

Describe the system

TOP-DOWN APPROACH

MODEL MACRO BEHAVIOUR

DESCRIPTIVE ANALYSIS

Describe the elements

BOTTOM-UP APPROACH

MODEL MICRO BEHAVIOUR

EMERGING PATTERNS

DESCRIBE THE SYSTEM

Network science

INTERACTION BETWEEN ELEMENTS

UNVEIL PROPERTIES OF A SYSTEM WITH ANALYSIS

RELATED TO DATA SCIENCE

WHEN TO USE

Network science

WE DON’T KNOW THE BEHAVIOUR OF ELEMENTS
OR IT IS TOO COMPLICATED TO MODEL

WE HAVE DATA ON THE BEHAVIOUR OF THE SYSTEM

WE DON’T NEED TO KNOW WHY ELEMENTS
BEHAVE IN A PARTICULAR WAY

EXAMPLES IN BUSINESS

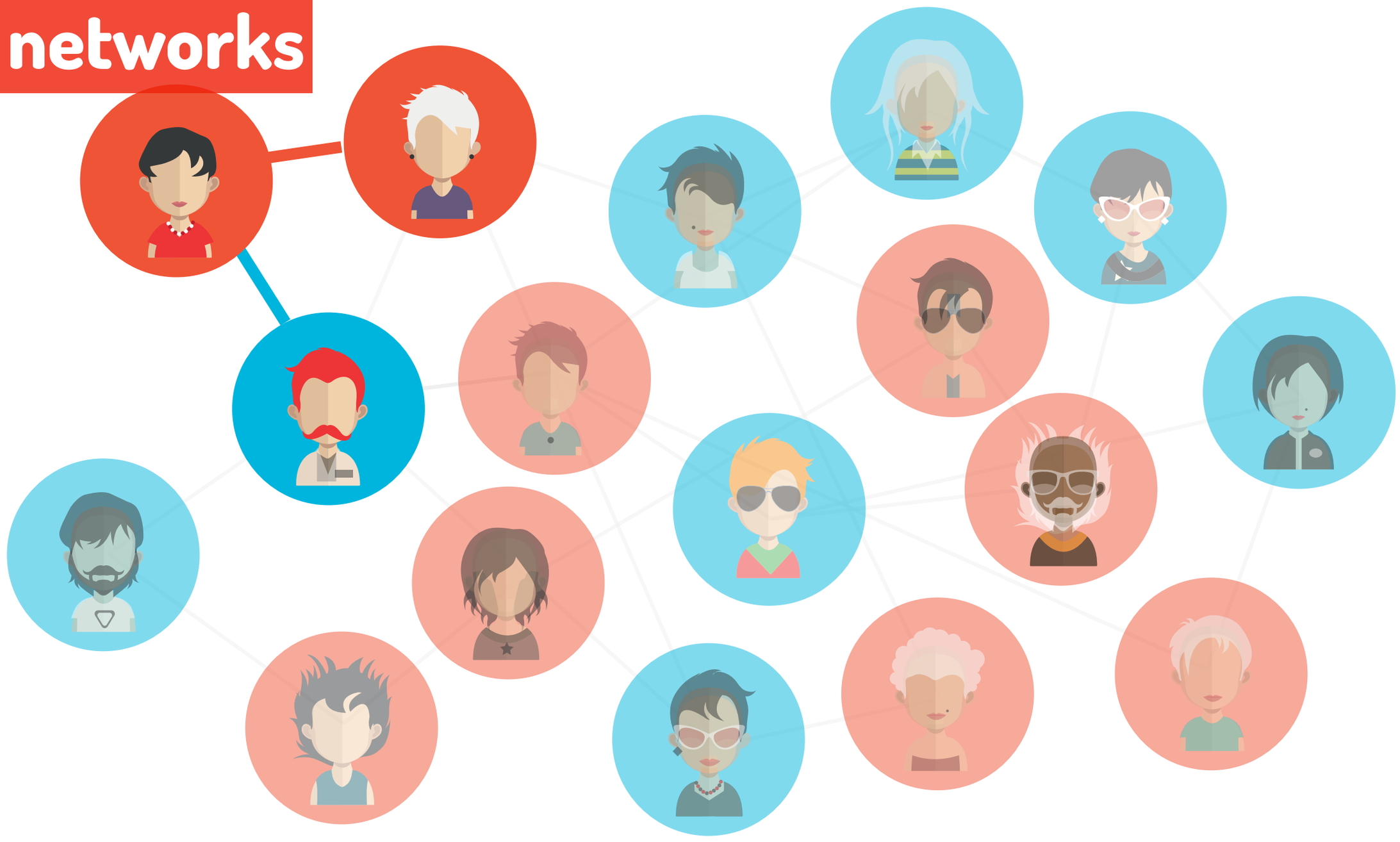
SOCIAL NETWORKS

INTERBANK NETWORKS

OPINIONS ON MARKETS

EXAMPLES IN BUSINESS

Social networks

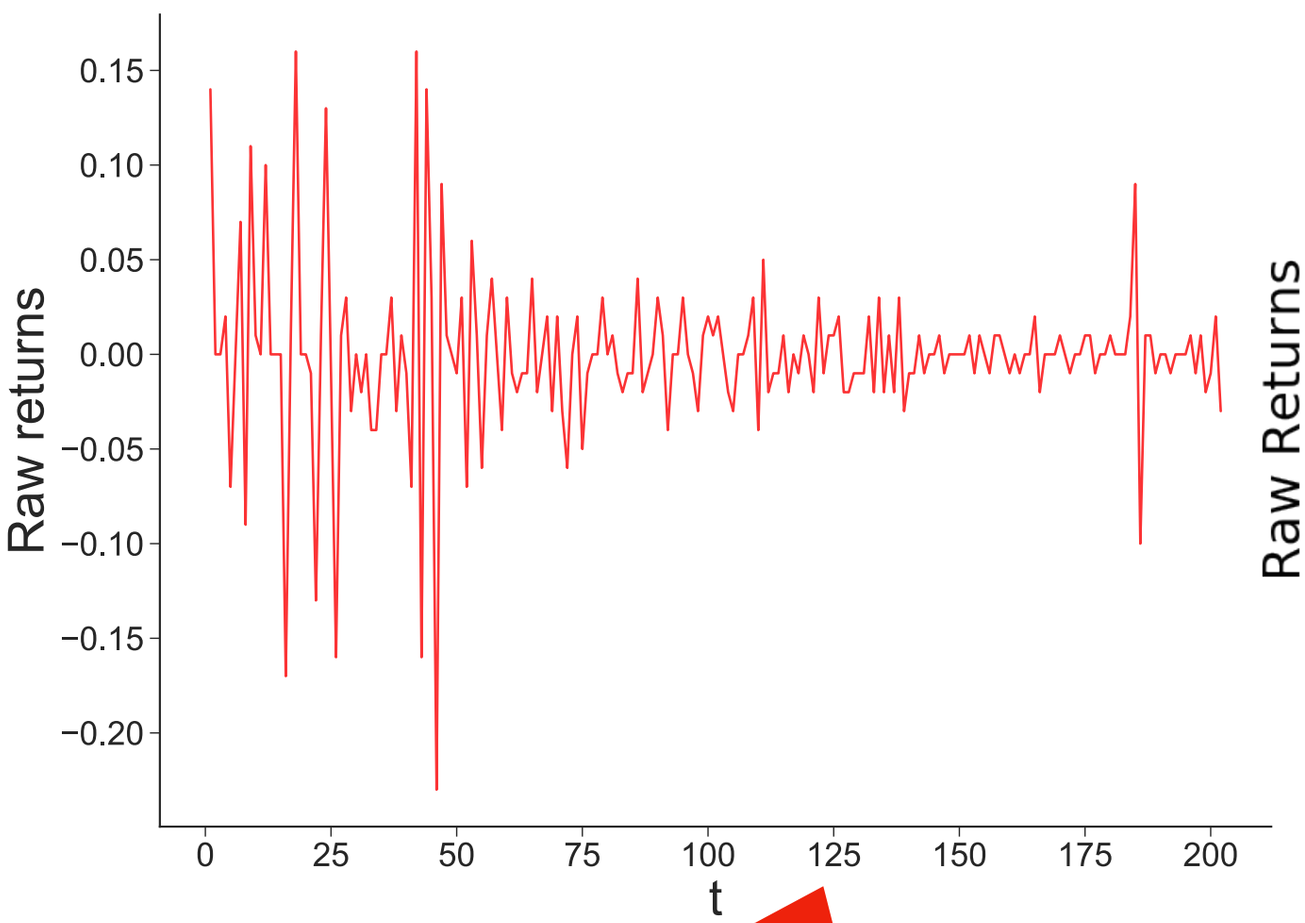


EXAMPLES IN BUSINESS

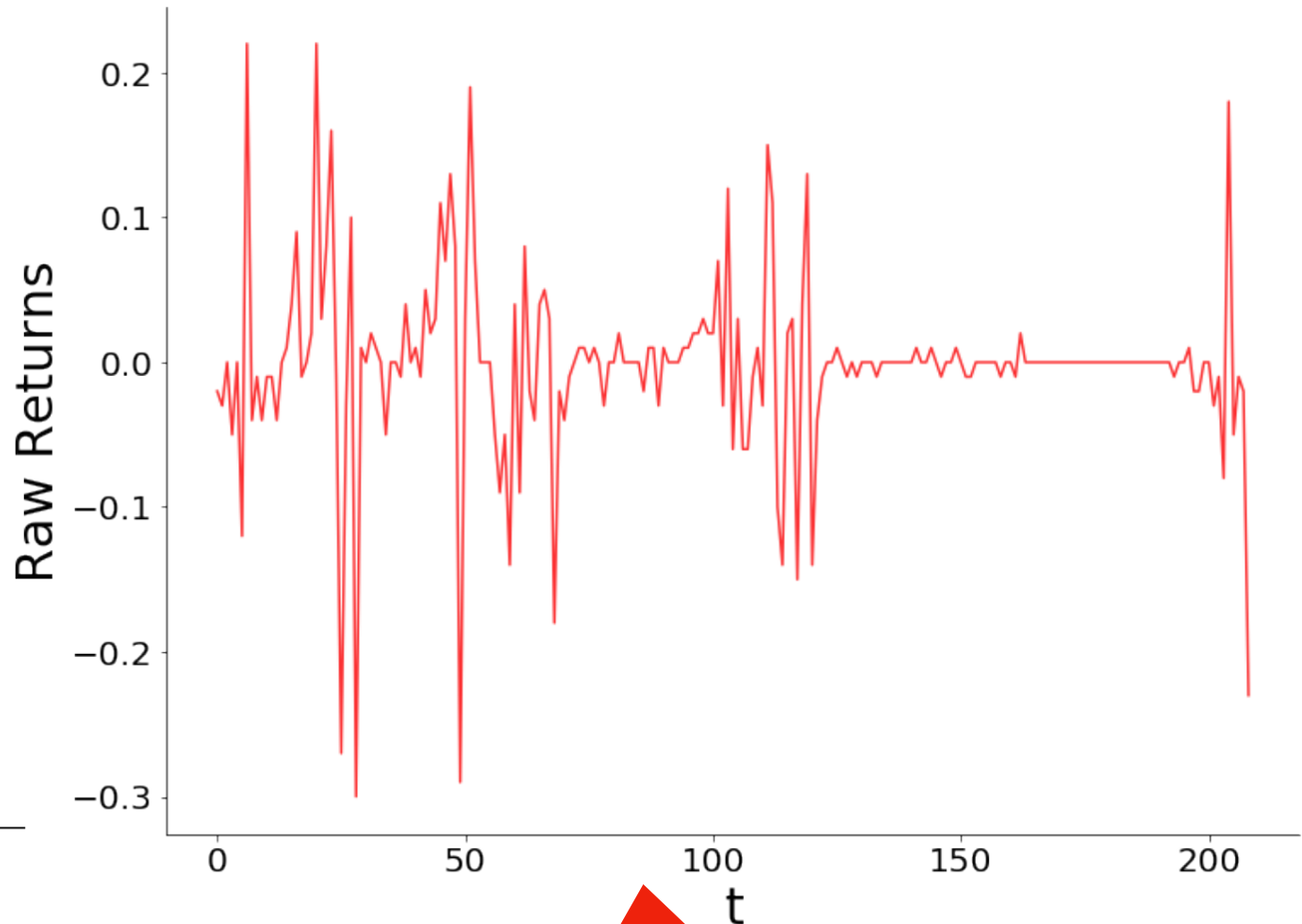
Interbank networks

EXAMPLE IN BUSINESS

Opinions on markets



Historical



Simulated

DESCRIBE THE ELEMENTS

Agent-based modelling

MAY OR MAY NOT HAVE INTERACTIONS BETWEEN ELEMENTS

DESCRIBE THE BEHAVIOUR OF ELEMENTS

SOCIAL SCIENCE AND PSYCHOLOGY

WHEN TO USE

Agent-based modelling

WE DON'T KNOW THE BEHAVIOUR OF THE SYSTEM
OR IT IS TO COMPLICATED TO MODEL

WE HAVE DATA (OR THEORIES) ON THE BEHAVIOUR OF THE ELEMENTS

WE NEED TO KNOW WHY THE SYSTEM
BEHAVES IN A PARTICULAR WAY

EXAMPLES IN BUSINESS

TRADERS IN THE MARKET

CREDIT RISK

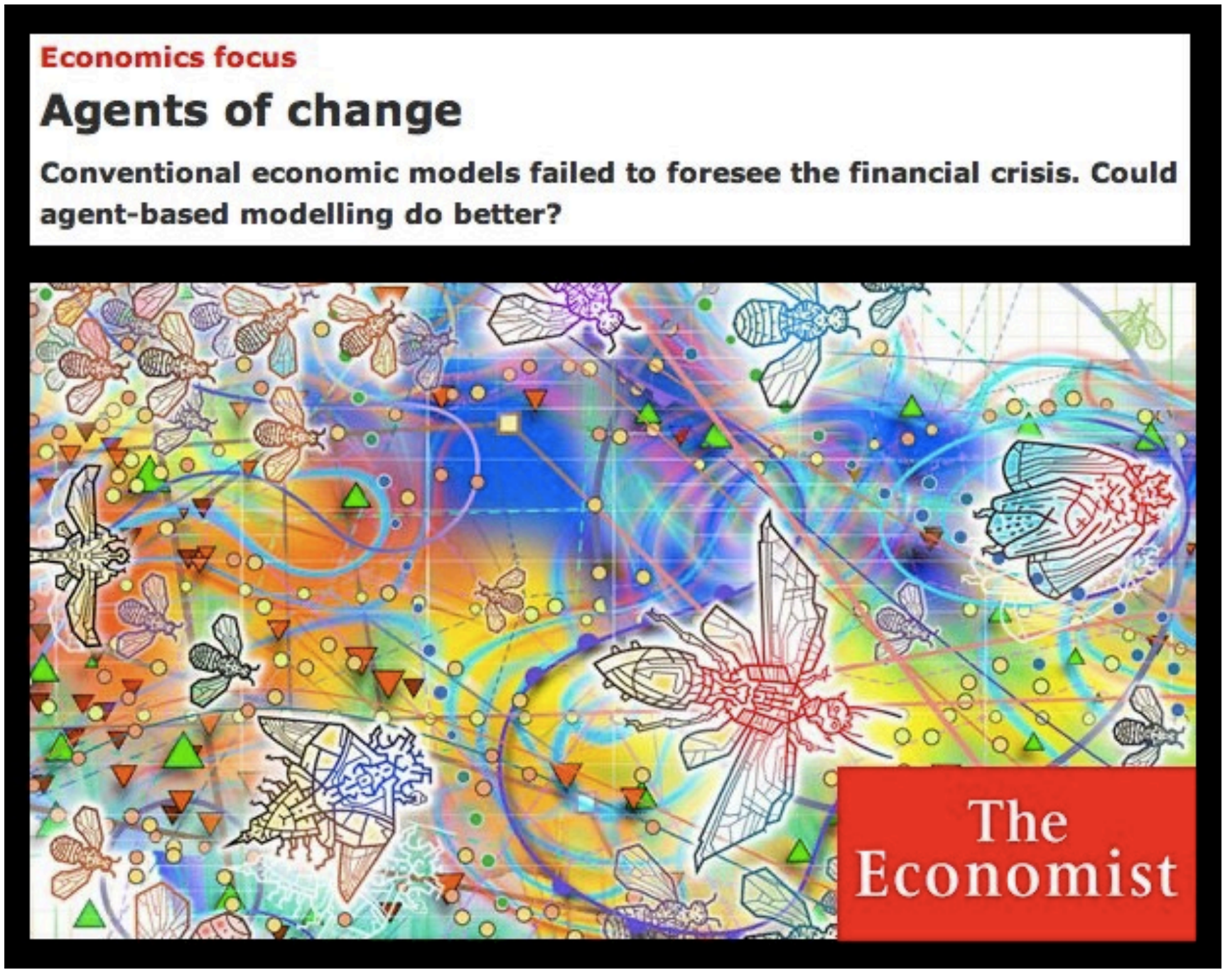
MARKETING

EXAMPLES IN BUSINESS

Traders in the market

EXAMPLES IN BUSINESS

Credit risk



EXAMPLES IN BUSINESS

Marketing

WHY IS THIS COURSE USEFUL?

MANY FINANCIAL INSTITUTIONS AND BUSINESSES HAVE LOADS OF PERSONAL DATA

SUCH INSTITUTIONS DON’T KNOW HOW TO USE THESE DATA

THEY NEED EXPERTS TO DO SO BUT CAN’T FIND THEM!

WHY IS THIS COURSE USEFUL?

YOU WILL BE THOSE EXPERTS!

SUCH INSTITUTIONS DON'T KNOW HOW TO USE THESE DATA

THEY NEED EXPERTS TO DO SO BUT CAN'T FIND THEM!

WATCH THIS DOCUMENTARY

Connected: the power of six degrees

https://www.youtube.com/watch?v=2rzxAyY7D7k