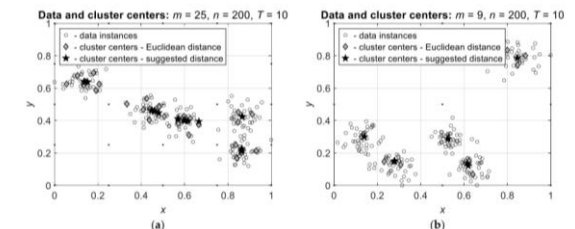
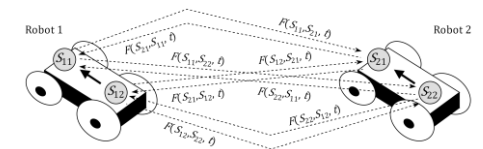
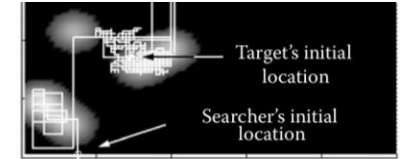


# Research fields

- Search in uncertain conditions
  - objective: decision-making policy and trajectories of the agents
  - methods: probability theory, possibility theory, signal and image processing
- Control of mobile robots and swarms
  - objective: path-planning and navigation algorithms
  - methods: control theory, probability theory, dynamical systems theory
- Decision-making with uncertain information
  - objective: methods of rational and irrational decision-making and prediction
  - methods: probability theory, fuzzy logic, statistics
- Classification and statistical analysis
  - objective: algorithms for classification and analysis of multivariate data
  - methods: probability theory, statistics, fuzzy logic



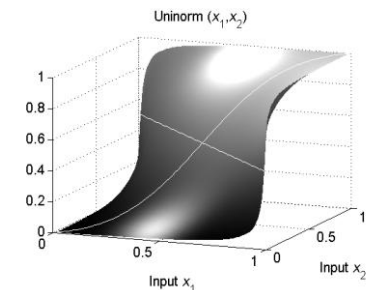
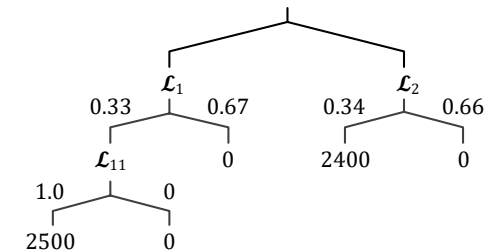
# Current projects 1/3



- Search for irrational targets

*Targets can make decisions, which do not follow maximization or minimization of certain criteria, but are either irrational or follow unknown optimization criteria*

- objective: decision-making policy and trajectories of the search agents
- methods: probability theory, possibility theory, game theory
- status of the project: exist mathematical instruments and general model of search
- still unknown: exact model of target's behavior, searchers' policy
- requirements:
  - desire and ability to learn methods of possibility theory and fuzzy logic
  - knowledge or desire and ability to learn programming in Python / MATLAB

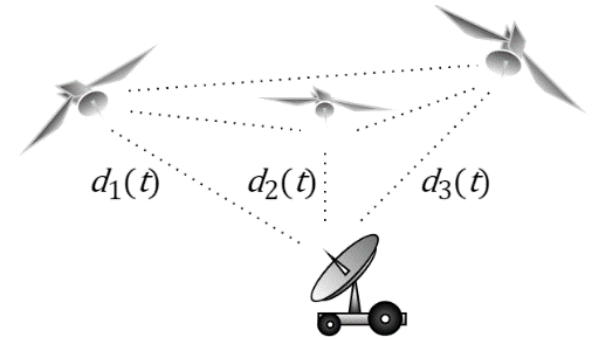


# Current projects 2/3

- Chases and escapes game between AI agents

*The target and the searcher are AI governed mobile robots*

- objective: game between AI governed mobile robots
- methods: AI platforms (Gemini, ChatGPT), control theory, game theory, protocol programming
- status of the project: exist general model of the game, ideas of the protocol, Python API with Google, connection with Arduino controllers, Arduino controlled mobile robots
- still unknown: project and implementation of the protocol, implementation of the game
- requirements:
  - knowledge or desire and ability to learn programming in Python and C++ for Arduino
  - knowledge or desire and ability to learn mobile robots' programming and control



# Current projects 3/3

- Fuzzy model of quantum computations

*Modelling quantum computations and algorithms by analog computations*

- objective: models of quantum computations by multivalued logic methods
- methods: quantum information, fuzzy logic, automata theory
- status of the project: exists mathematical model of quantum gates based on fuzzy Tsetlin automata
- still unknown: implementation and models of quantum algorithms based on the indicated model
- requirements:
  - desire and ability to learn methods of quantum information theory
  - desire and ability to learn methods of automata theory
  - knowledge or desire and ability to learn programming in Python / MATLAB

