Distributed Artificial Intelligence and Intelligent Agents

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Course info

Coordinator

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Assistants:

- Shatha Jaradat (Course assistant)

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Lectures:

Recorded lectures are available. Discussion sessions are scheduled as lecture slots

Exercises:

see schedule

Workshop Slots:

Non-mandatory group work

Written examination (4.5 p.)

January 13 at 14-18

Registration at least 21 days before exam period

Homework and project assignments (3 p.)

Schedule

- Allocation of lectures and tutorials to scheduled time-slots for Zoom discussion meetings:
  - Lectures discussions:
    - October 26, 27, 28
    - November 2, 6, 10, 13, 16, 19, 24, 27
    - December 1
  - HW Tutorials:
    - November 3, 11, 16, 25
    - December 2

Homework

There are 3 Homework with deadlines.

Start Date	Due Date	Description
2020-11-03	2020-11-10	Homework 1
2020-11-11	2020-11-18	Homework 2
2020-11-16	2020-11-25	Homework 3

It is assumed that the Homework are done by groups of 2 student – you can do it also alone but there will be no additional bonus for doing them alone

Mini-Project

Size of the mini-project

A bigger than HW assignment

Topic

You are supposed to design an agent system for a suggested specification.

You can also make your own project proposal for the system - the proposal must be approved by the course coordinator (the last date for approval of your own project proposal is **November 25**).

Homework and project bonus points

1. Delivering each homework and a project in due time gives 2 bonus points (this assumes that all Homework are approved by TA). For approval, if in the case there were small problems in the solutions during discussion, we usually give maximum one week to reflect the changes and then the bonus is recorded.
2. For each each Homework and project approval from the first attempt gives 1 bonus point.
3. In case of Late Submission of any Homework, No bonus points will be awarded for the "in-time submission of homework".
4. Challenges of assignments (on time + approved from first time) - up to 3 points per each. If not submitted on time, no bonus for challenges
5. Challenges in project (on time + approved from first time) up to 9 points

Total up to $8 + 4 + 9 + 9 = 30$ points

ALL Bonus points are only valid for the first exam on January 13

Course literature

- M. Wooldridge: *An Introduction to Multi-Agent Systems*. John Wiley and Sons, Second edition (Chichester, England).
- lecture notes
- selected papers (an additional listing of literature may be provided in the course)

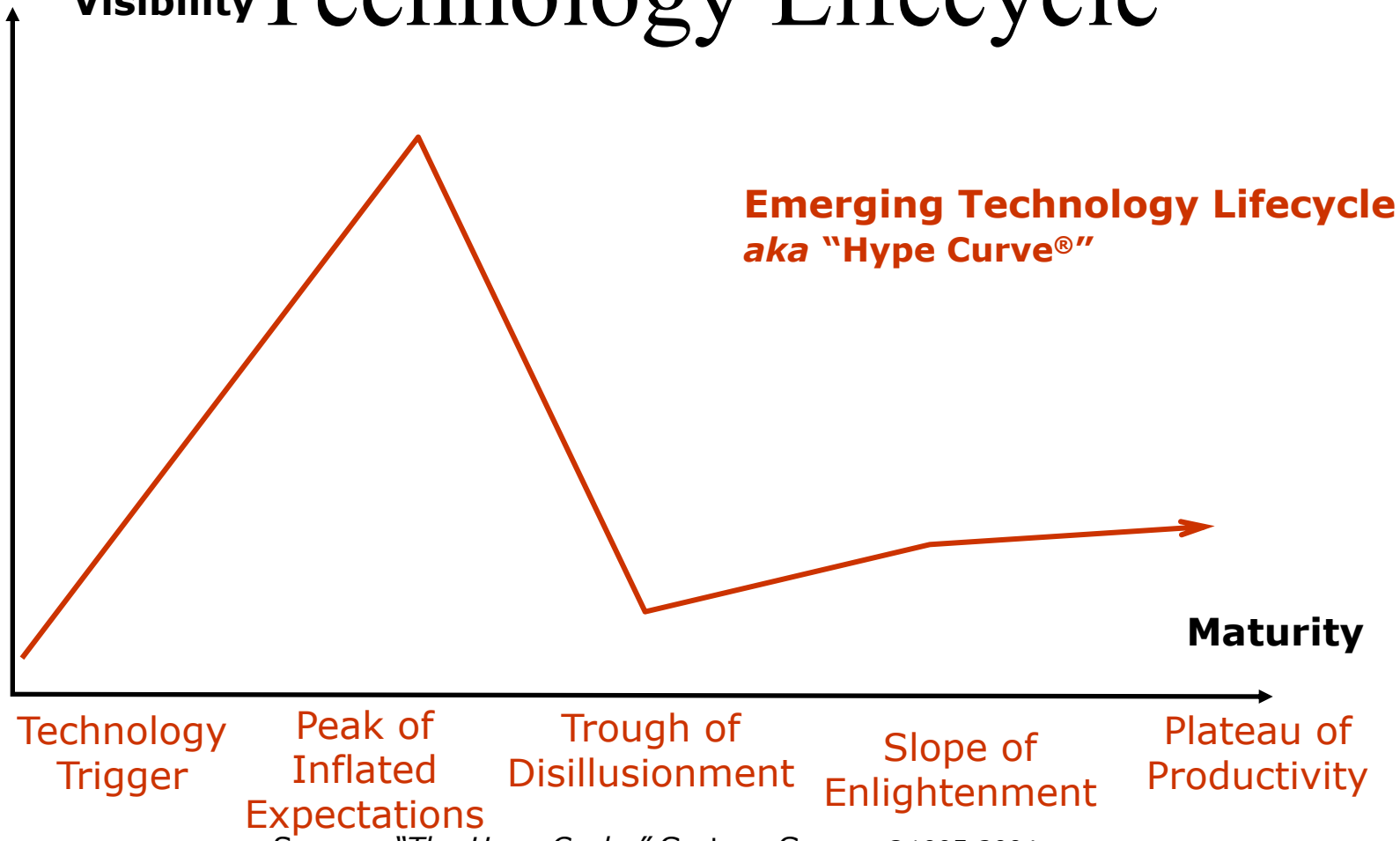
Tentative Disuccsion Topics Plan

	Date	Lecture
1	26.10.2020	Introduction and Overview
2	27.10.2020	Negotiation in MAS
3	28.10.2020	Negotiation in MAS
4	02.11.2020	Negotiation in MAS
5	06.11.2020	Communication in MAS
6	10.11.2020	Coordination in MAS
7	15.11.2020	Multi-agent Systems Architectures
8	13.11.2020	Agent-oriented Software Engineering
9	16.11.2020	Agent Theory
10	19.11.2020	Agent Theory Agent Architectures
11	24.11.2020	Agent Architectures
12	27.11.2020	Mobile Agents and other Applications Summary
13	01.12.2020	Reserved slot

What will you learn from this course?

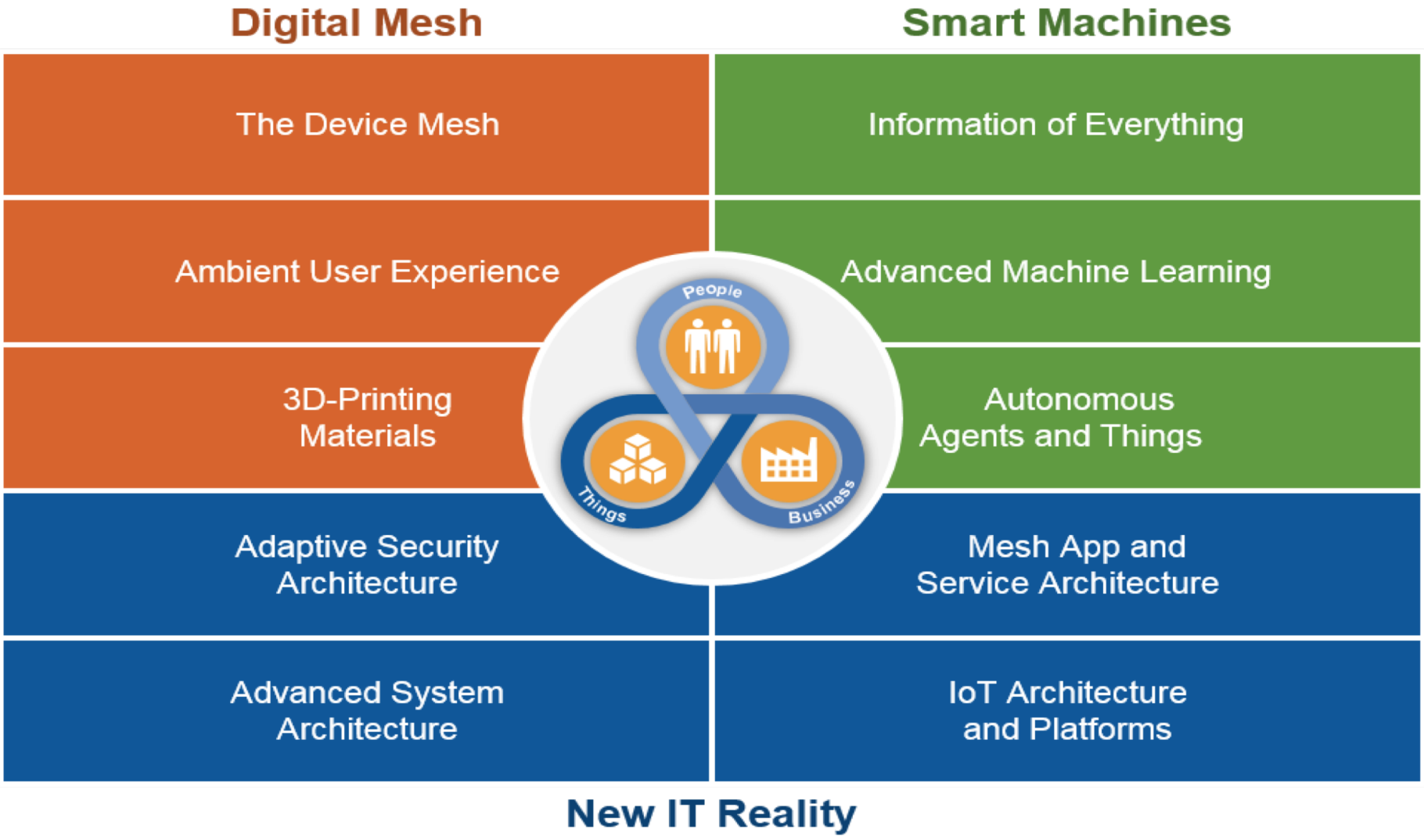
1. **Learn what agents and multi-agent systems are (foundations of intelligent autonomous systems)**
2. **Have a good overview of important agent issues:**
   - ⇒ **Agent Coordination, Negotiation, and Communication**
   - ⇒ **Agent-Oriented Software Engineering**
   - ⇒ **Micro (intra-Agent) and Macro (agent systems) agent architectures**
   - ⇒ **Agent Intelligence Mechanisms**
3. **Get valuable hands-on experience in developing agent systems**
4. **Being able to distinguish hype from ”golden nuggets” in the area of Software Agents**

But, Remember the Emerging Technology Lifecycle



Source: *"The Hype Cycle,"* Gartner Group, ©1995-2004

Gartner Identified Top 10 Strategic Technology Trends for 2016:



From Source: Gartner (October 2015)

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“Trend No. 6: Autonomous Agents and Things

Advanced machine learning gives rise to a spectrum of smart machine implementations — including robots, autonomous vehicles, virtual personal assistants (VPAs) and smart advisors — that act in an autonomous (or at least semiautonomous) manner. VPAs such as Google Now, Microsoft's Cortana and Apple's Siri are becoming smarter and are precursors to autonomous agents. The emerging notion of assistance feeds into the ambient user experience in which an autonomous agent becomes the main user interface. Instead of interacting with menus, forms and buttons on a smartphone, the user speaks to an app, which is really an intelligent agent. These intelligent agents may be associated with an individual app or act across multiple apps. IT leaders should explore how they can use autonomous things and agents to free people for work that only people can do.

However, they must recognize that smart agents and things are a long-term phenomenon that will continually evolve and expand their uses for the next 20 years.”

Gartner Gartner (October 2015)

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