



Million AI School

백작 (백만송이 작은 AI) 스쿨)

Meetup Kick Off ~ Sep 7th, 2016

Seoul National University, Institute of Computer Technology, Seoul

AI Technology



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On Artificial Intelligence

the best defense is "to empower as many people as possible to have AI. If everyone has AI powers, then there's not any one person or a small set of individuals who can have AI superpower"

- in creating OpenAI

One Million People, One Million AI Ventures, a Cultivation of AI Culture

YLFF & AIBrain



AIBRAIN, INC
THE INTELLIGENT COMPANY

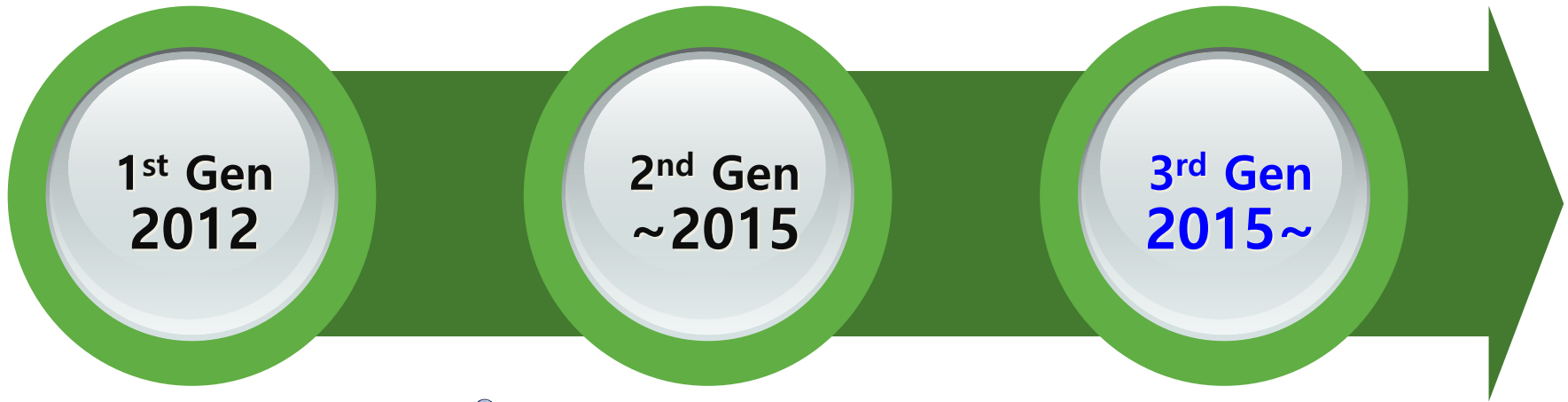
AI by Definition

- Artificial Intelligence
 - a very general mental capability that, among other things, involves the ability to **reason, plan, solve problems, think abstractly, comprehend complex ideas, learn quickly, and learn from experience** – Prof. Linda Gottfredson
- Superintelligence
 - an intellect that is much smarter than the best human brains in practically every field, including scientific creativity, general wisdom and social skills – Nick Bostrom

AI Calibers

- Artificial Narrow Intelligence (ANI)
 - Also called weak AI
 - Specializes in one area only
- Artificial General Intelligence (AGI)
 - Called strong AI or Human level AI
 - Computers as smart as human across the board
- Artificial Superintelligence (ASI)
 - ranges from a computer that's just a little smarter than a human to one that's trillions of times smarter—across the board
- ***AI Revolution: Road from NAI, through GAI, to SAI.***

AICoRE: 3rd Gen IPA (Intelligent Personal Agent)



Siri: predefined keyword matching and slot filling
 → no deep parsing!

GVA, Siri



- Knowledge based reasoning
- Personalization with user experiences

InformaProvider →
Personalized Knowledge Management

Google Assistant



LoLa



Deep language understanding & Incremental Learning

- Case-based NL Dialog Management
- CBR driven problem identification
- Incremental Memory-based learning
- Multi-agent cooperative problem solving



(Source: AIBrain, 2012; as part of a joint proposal of 3rd Gen IPA with Dr. Ray Perrault, Director, AIC, SRI International)

AI Core Techniques

- Machine Learning (ML), Reasoning and Perception
 - Computing systems consider uncertainties and make the best solution or recommendation
 - With ML methods like Neural Network and Deep Learning, computer gets better at something based on the *data* that it receives

- Integrative AI

- **Vision**
- **Speech**
- **Natural Language**
- **Machine Learning**
- **Planning**



**Consumer driven
Technology**

Capable systems that can see, understand everyday speech, give recommendations, and converse with people

AI Revolution as the Hotbed of the Future

Computing scaled to the cloud

Web – opportunities to collect, store, and share large amounts of data (IoT).

- AI potentials keep big companies awake 24/365. They are more dependent on successful AI-based systems
 - Google
 - Facebook
 - IBM
 - More than 1000 startups
- Goal : enhance people's quality of life in **Education, Transportation, and Health care.**
- Technologies
 - Virtual Personal Assistant – Apple Siri, Google Now, MS Cortana
 - Watson – Jeopardy
 - Driverless cars
 - Robotics
 - Internet
 - Smartphone – Personal Computing Power

Why now?

- With increased cloud computing power, machines can do more and faster
- Big data more structured
- Data storage cheaper

AIBrain Inc Core

Billions of global consumers are looking for the three main applications:

- AI Robot but able to learn incrementally as a companion
- Virtual AI assistant learning incrementally about me while differentiating from others
- Truly Intelligent game where every character is a human-like intelligence

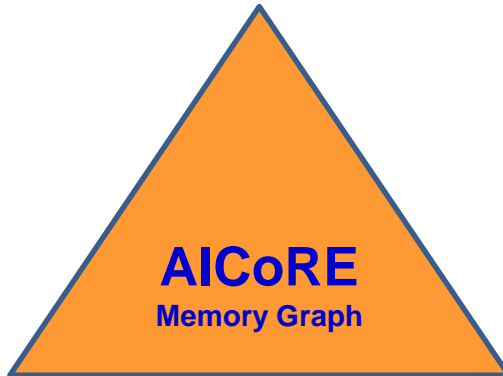
1. Tyche is the true AI companion

The Truly Intelligent Game

where every character is a human-like intelligence



AI Robot



Virtual AI Assistant



AIME (AIBrain)

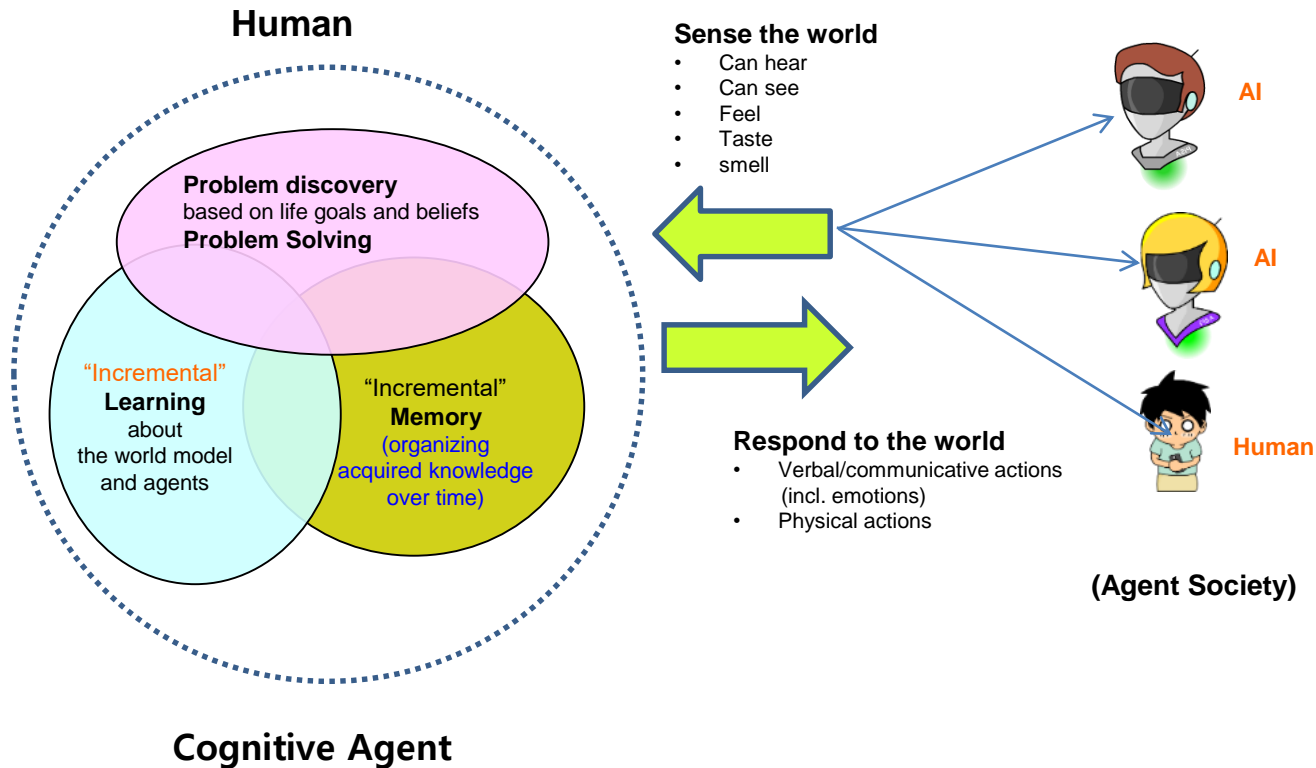
3. Futurable is the true AI game

AI agent Plugin for
game developers

2. AIME is an human-like AI avatar



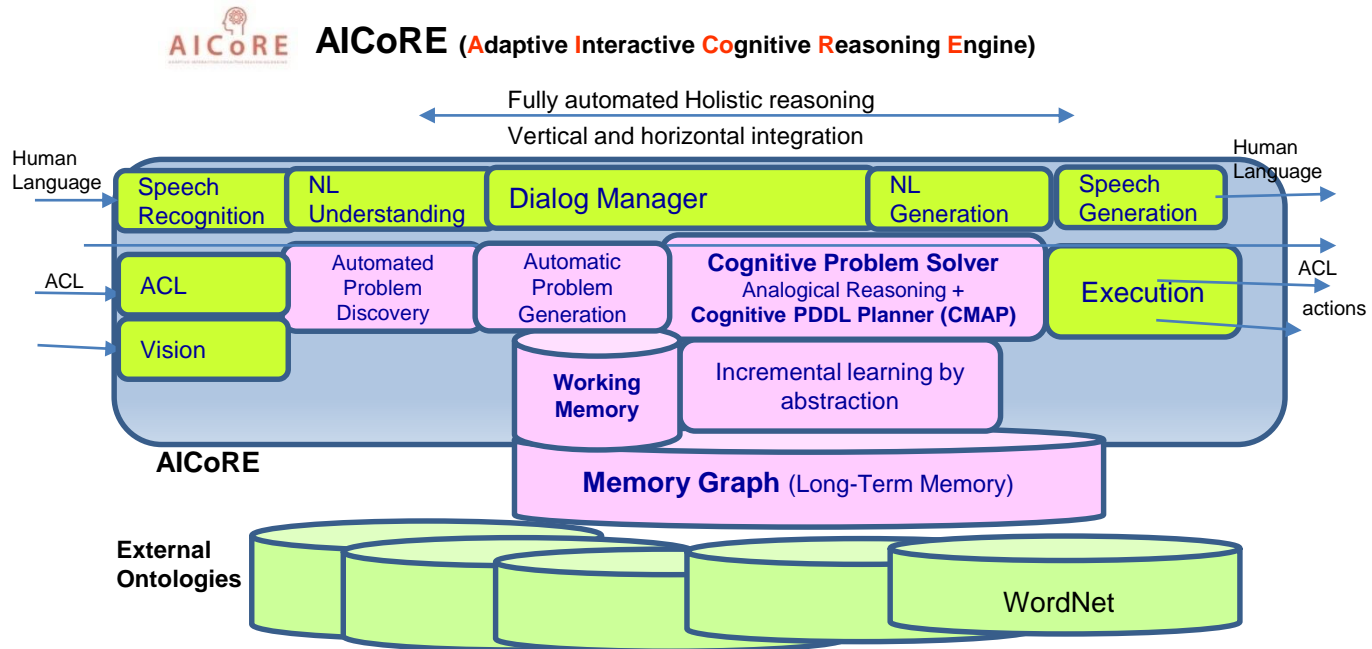
AiBrain's AI Approach



AIBrain: Cognitive Agent

AICoRE is a **fully automated cognitive engine by unifying Problem Solving, Learning, and Memory.**

- **CMAP (Cognitive Multi-Agent Planner)** as **the most advanced multi-agent cognitive planner**
 - **AICoRE is Incremental Holistic Human-like Reasoner, covering the full spectrum of reasoning.**
It is **highly practical** with the world's most advanced cognitive planner (CMAP)
 - **Memory Graph** organizes **both Episodic and Semantic Memory**
 - also supports incremental learning
 - will augment human intelligence with memory transfer





The major AI technologies that Tyche AI uses

	Categories	Our Choice	Remarks
1	Speech (SR)	Google SR	Microsoft Speech
	Text-To-Speech	Google TTS	Microsoft TTS
2	NLP (NLU)	Stanford NLP	
	NLP (NLG)	SimpleNLG	
3	Computer Vision	OpenCV (Open Source Computer Vision) FastCV (CV for mobile), Qualcomm https://www.youtube.com/watch?v=m6-qKzY_XI (1:47)	
4	Semantic Web	Apache Jena	
	Big Data	Apache Spark	
5	Ontologies	WordNet, JWNL (Java WordNet Library) DBPedia, OpenWeatherMap	
6	Machine Learning (DL)	TensorFlow	
7	Intelligent Agent	JADE/JadeX	
8	Augmented Reality	ARToolKit v5.2 (2004-)	
9	Robot Simulation/SW	Marilou/anyKode; uPnP (CORBA)(Gazebo/ROS)	
10	Robot Programming	MRPT (Mobile Robot Programming Toolkit)	

Links

1. IBM Watson

- <http://www.ibm.com/watson/what-is-watson.html> (2:14)

2. Jadex

- <https://sourceforge.net/projects/jadex/>

4. Google Speech recognition

- https://www.youtube.com/watch?v=iCk-nmtGt_c (1:05)

Google Text to Speech

- <https://www.youtube.com/watch?v=OsWrUYjUwV4> (2:06)

5. Stanford NLP

- https://www.youtube.com/watch?v=nfoudtpBV68&list=PL4LJlvG_SDpxQAwZYtwfXcQr7kGnl9W93 (12:51)

GATE

- <https://www.youtube.com/watch?v=qRQXEe58rJA> (4:53)
- <https://www.youtube.com/watch?v=nuOzsACICCo> (3:57)

Simple NLG

- Our integration demo (02:29)

6. WordNet (JWNL-Java WordNet Library)

- https://www.youtube.com/watch?v=NqdvEt_l48k (1:12)

Apache Jena

- <https://www.youtube.com/watch?v=nUdHneViLp4> (9:53)

7. Apache Spark - Intro

- <https://www.youtube.com/watch?v=SxAxAhn-BDU> (7:14)

8. OpenCV

- <https://youtu.be/OUbUFn71S4s> (2:15)

9. Gazebo/ROS/OSRF

Gazebo

- <https://www.youtube.com/watch?v=DCNpT1ng9sA> (06:36)

ROS

- <https://www.youtube.com/watch?v=9U6GDonGFHw> (25:35)

OSRF

- <https://www.youtube.com/watch?v=iR4c0pWSAf8> (3:40)

10. ARToolKit v5.2

- <https://www.youtube.com/watch?v=amxO38aoKZc&index=7&list=PLUtkqA7NXVH5Yj0Oo0jynHGlf3roM1kXU> (1:41)



Tyche AI Robot

Tyche AI in 6 Android apps, **download** from Google Play

Tyche Apps	App Name	version
1	Tyche Conversational	TCI v1.0
2	Tyche Vision	TVI v1.0
3	Tyche Plan and Move	TPM v1.0
4	Tyche Remote Communication	TRC v1.0
5	Tyche Build own intelligence	TBO v1.0
6	Tyche Dashboard	TDB v1.0

"This little robot is *apparently the most intelligent smartphone robot in the world...*"
(The Guardian, January 2014)



AlBrain's Technology Demos

AI Robot Companion

AI Virtual Assistant

AI Games

AI Applications

Supported by AI,

- doctors will have a vastly augmented ability to spot cancers in medical images;
- speech-recognition algorithms running on smartphones will bring the internet to many millions of illiterate people in developing countries;
- digital assistants will suggest promising hypotheses for academic research;
- image-classification algorithms will allow wearable computers to lay useful information onto people's views of the real world.

AI in Our Life

- Education
- Social media
 - Instagram : Prisma
- B2B Marketing Software
- Self-Driving
- Editor
- Banking
- Deepmind
 - AlphaGo
 - Electricity
- Office workers
- Healthcare
- Journalism
- Accounting
- Online marketing

Virtually Everything

❖ Future Jobs – Food For Thought!

Conclusion

- ✓ AI is here to stay and will only get better
- ✓ Optimization better in some tasks than we can do as human beings
- ✓ Truth : Human-like cognition machines will take a long time to develop



&



Thanks

www.aibrain.com