

Are You Futurable?



Futurable

“True” AI Game for Future Simulation

Richard Shinn, Ph.D.
CEO & Founder, AIBrain



AIBRAIN, INC
THE INTELLIGENT COMPANY

Slogan: **Be intelligent in every aspect**



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Seoul, Korea (1997-)
Palo Alto/Menlo Park, CA (2012-)
Shenzhen, China (2016-)

Purpose: Augment Human Intelligence with AI
by unifying 3 essential aspects of human cognition
Problem Solving, Learning, and Memory

AIBrain selected among Top 20 AI Companies
with Amazon, Apple, Facebook, Google and IBM (Datamation, Sep 2016)

Gamifying AI to benefit the broader world of people and society

Futurable, AI Simulation Game where every character is autonomous AI

- A top 30 Indie Game by Google Indie Games Festival (Aug 2016)



AI Robots

- **Tyche: AI Robot for Kids (8+)** (Will sell on Amazon, April 2017)
- "is apparently the most intelligent smartphone robot in the World ... " (The Guardian, Jan 10, 2014)
- **Athena: The Most Affordable AI Robot at Home and Work**



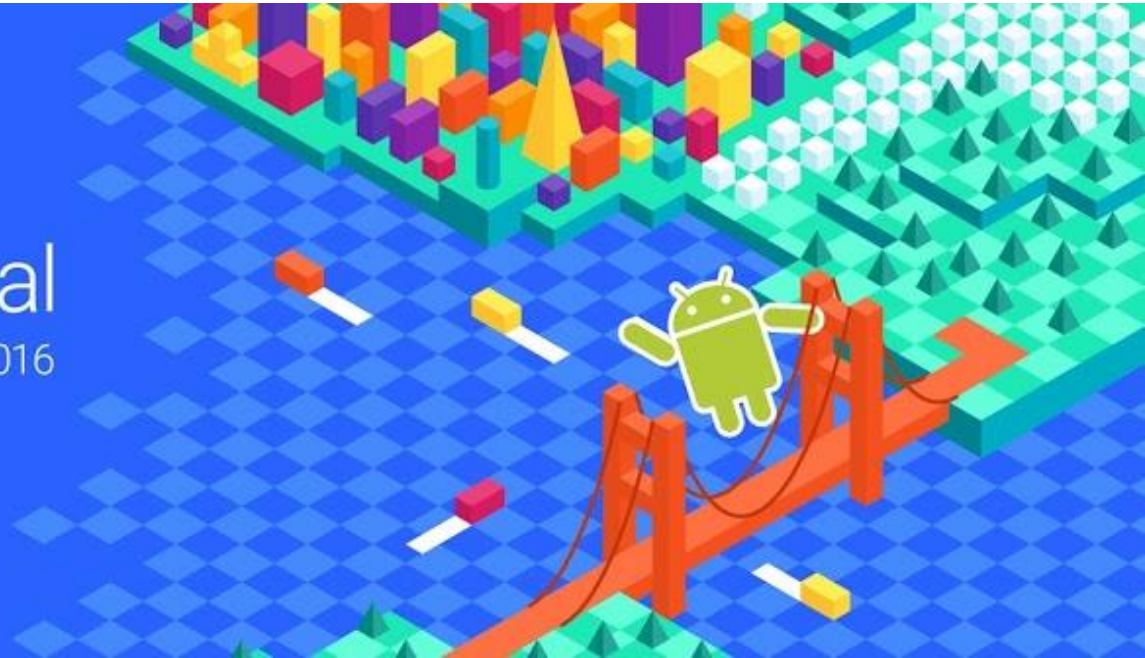


Futurable 1 [Alpha] selected among the 30 best new indie games from 200+ entrants to participate at the 1st Google Indie Game festival

<https://events.withgoogle.com/google-play-indie-game-festival/exhibiting-games/>

Indie Games Festival

San Francisco, Saturday, September 24, 2016



Futurable 1. Summer City



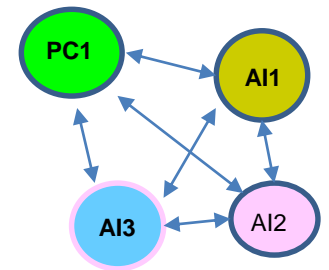
Futurable lets a player travel to future life in an AI-simulated environment where every character is a fully autonomous AI. The goal is survival and prosperity by improving Physical Health, Cognitive Intelligence, and Social Intelligence by interacting with AI characters. The core AI technology is scalable to millions of characters.

Get it on [Google Play](#).



Futurable: True AI Game to Build a Better Future

Futurable is an AI simulation game similar to **Sims** (Life Simulator), but every character is a fully autonomous AI



Autonomous AI characters

<https://www.youtube.com/watch?v=Bzd2Ho4PakE&feature=youtu.be>

Indie Games Festival • San Francisco, Saturday, September 24, 2016

Futurable 1 - Summer City [Alpha]

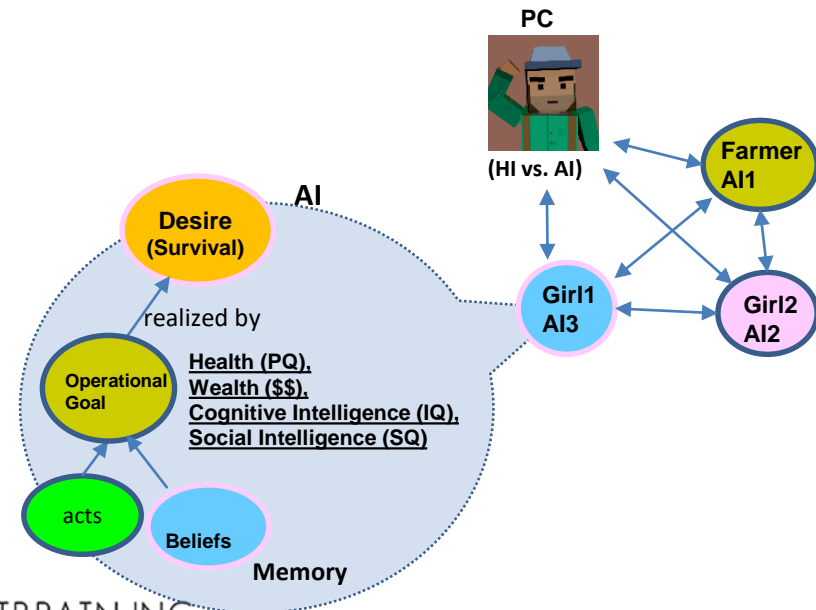
is a fully autonomous AI game for future travel

Purpose: Every character desires to survive and prosper based on its inborn **physical** and **mental** capabilities.

THE 1st TRULY INTELLIGENT GAME



<https://www.youtube.com/watch?v=5u9tzFjthO8> (2:07)



Game AI vs. AI Game

Game AI - mostly not about intelligence

often consists of a half-dozen rules of thumb or heuristics



Selection of actions are randomized

Autonomy when a Sim is on auto-pilot.

The AI's efficiency has been improved by creating an autonomy hierarchy.

AI Game (True AI or Strong AI) mimics human thought processes

True AI game where every character is a human-like **autonomous agent**. – which is capable of incrementally learning and solving problems while interacting with the outside world.

Full Autonomy



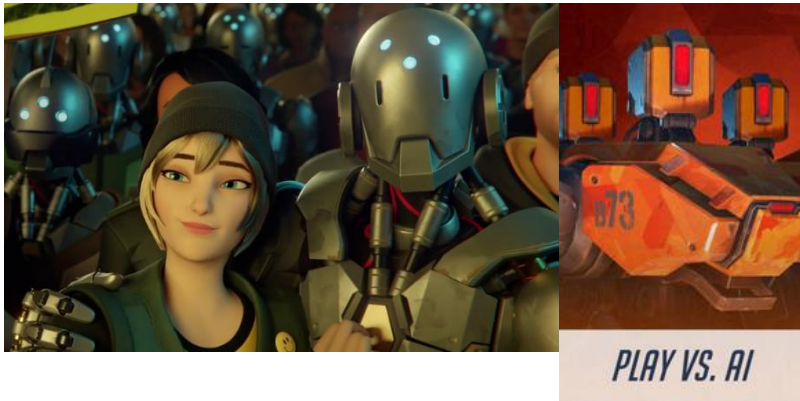
Tony can maximize Wealth, PQ, IQ, and SQ

Tony and Alto are going home after work and training.



Overwatch

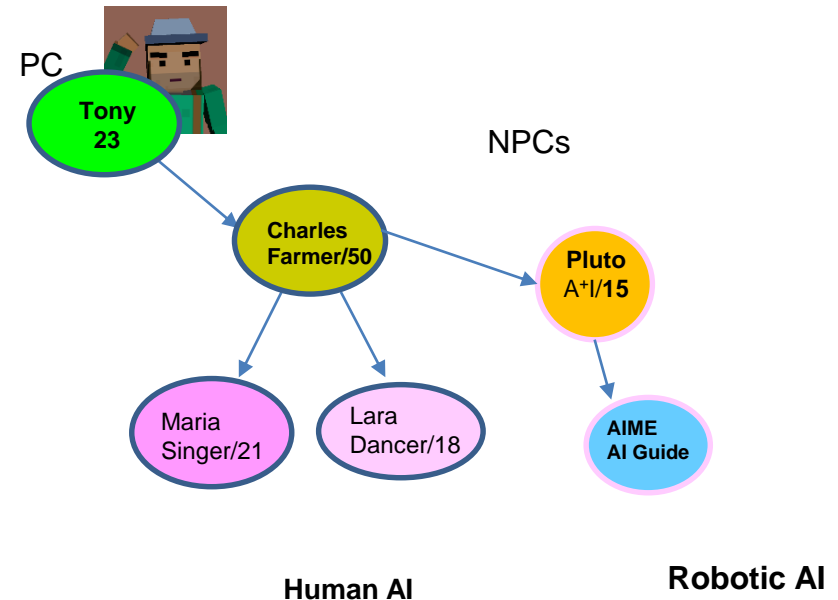
Blizzard launched the game **with only 6 working AI Heroes. Very Lazy**



“Cute Omnic/Human couple from the Alive trailer”

Play vs. AI mode: players can team up and battle against AI-controlled characters. (6 player vs. 6 AI).

Scalable to a great number of AI characters which are fully autonomous



Fun to Play

Current game play is often repetitive over the pre-defined alternatives leading to destined life scenarios → Boring!



Fun to guess freely based on own experiences (open-ended)
Player could be inspired by interacting with autonomous AIs



It is More than a Pastime! - Fulfilling

Awakening – Hoping for the Future

Enlightening – Seeing is Believing

Inspiring – Exploring the Future together with Autonomous AIs



Futurable's symbol manipulation as well as number crunching

Major Features	GiAR Lite & Full (AIBrain)	AlphaGo (Google)
Autonomy	Supports fully autonomy of all characters each character can have its own AI planner-core and life-goals (further realism, leading to more believable/exciting gameplay, and re-playability)	
<u>Domain Independence:</u> Is the system independent of problem domains?	Yes (not only to Futurable, but also easily applicable to any game such as Go, Texas Hold'em Poker, StarCraft II; Sims, Call of Duty, GTA5)	(only works for Go)
<u>Generality:</u> How many planning methods?	GiAR Full: 6 methods (but soon 7) GiAR Lite: 1 method (Neural Net Planner)	Only 1 planning method (MCTS)
Does it include MCTS (Monte-Carlo Tree Search) ?	Yes (GiAR Full)	Yes (that is the framework of the whole system)
Deep CNN (Convolutional Neural Networks) included?	Yes (GiAR Lite only)	Yes
<u>Multi-agent Problem Solving:</u> Does it work with multiple agents (>2)?	Yes: supports modeling of multiple characters; goal- and utility-driven inter-agent communication; Multi-agent cooperation & competition Supports MA-PDDL (Multi Agent Planning Domain Definition Language)	No (just 2; AI against human or AI)
Scalability	Lightweight: requires minimal computational resources (e.g., CPU and memory); provides superfast real-time responses (percepts-to-actions); runs on any device (smart watches, cellphones, desktops, servers...); scalable (e.g. can be scaled-up to power a large number of advanced, intelligent characters even on one device; crowd / city / economic simulation; etc.).	

Futurable is also a showcase of How to “build your own” AI game!

Futurable 1 is a proof-of-concept for **AI plug-in** for developers who want to build their own AI games

Note that **AI plug-in** is based on **GiAR (General intelligent Agent Reasoner)**



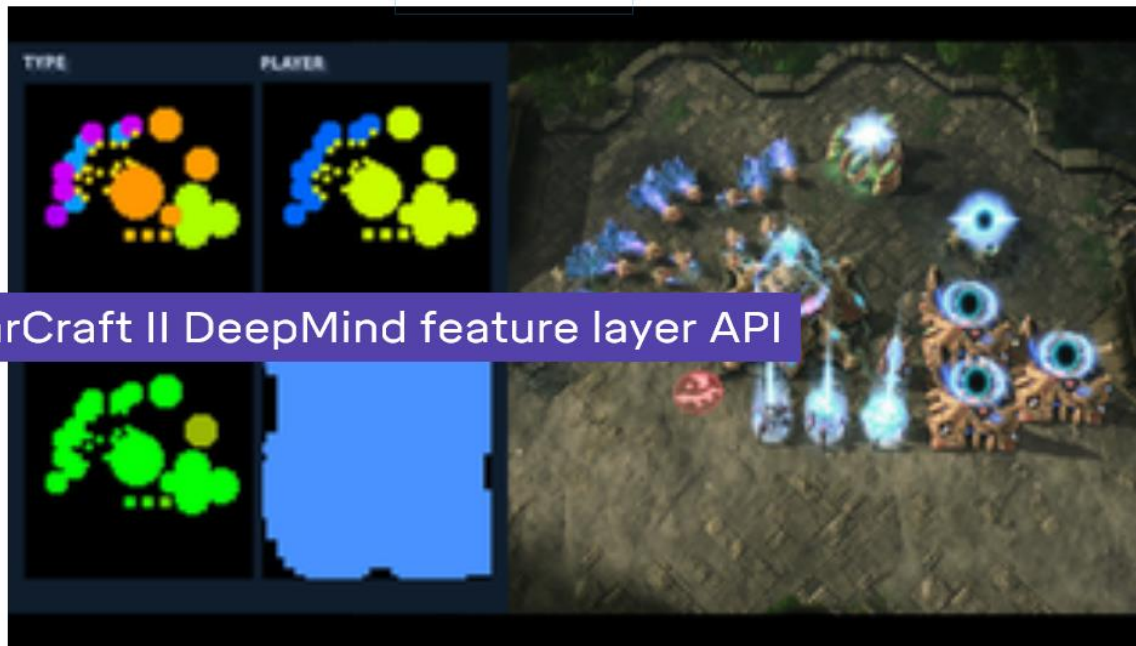
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Google's StarCraft II AI env.



Google DeepMind and Blizzard to release StarCraft II as an AI research environment (Nov. 4, 2016)

Blizzard and Google begin collaboration on using DeepMind to create an AI Starcraft II bot to beat the Starcraft players. Nov 9, 2016



- Mainly just the 2-3 different teams (Human, Protos, Zerg) are AI players.
- Fixed game environment / domain.



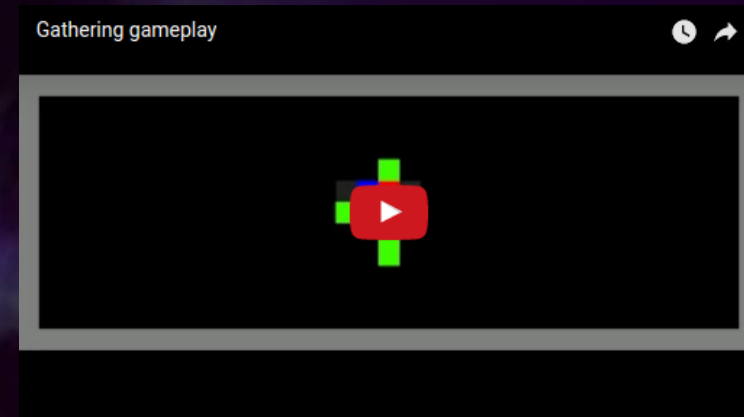
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Google's deep MA-RL tech



Google DeepMind publishes preliminary results about deep Multi-Agent RL (Reinforcement Learning) (Feb., 2017)

- **Toy-demonstrations** of something of much larger importance (e.g. about traffic-light control + CO2 emission-reduction AI-s effectively competing / cooperating).
- **Game-theoretic background** outdated (e.g. iterated the Prisoner's Dilemma).
- Not aimed at game developers.
- Same deep neural AI **could control NPC-s in other games**, not just in the Wolfpack environment?
- The demos show use of incremental MA-RL (Multi-Agent Reinforcement Learning), **capable to learn incrementally in runtime**, and improve.
- We are considering adding such AI capabilities.





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Few screenshots (from the alpha)



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Futurable: AI Game for Future Travel

Seeing is believing!

Fun and Inspiring Way to Build a Better Future

Richard Shinn, Ph.D.
CEO & Founder, AIBrain
email: shinn@aibrain.com

www.Futurable.co



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Vision: Top 10 AI Company (2020)

AIBrain AG
(Switzerland, 2018)



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- **Athena** at Home and Work

Futurable, AI Game for Future Simulation
as a top 30 Indie Game by **Google** (2016)

A+I
(Augmented
Intelligence)

AIBrain Asia

非凡智慧科技深圳有限公司 (AIBrain Shenzhen, China 2017)

A I プレーン株式会社 (AIBrain Tokyo, Japan 2017)

에이아이브레인(주) (AIBrain Seoul, Korea, 1997)

AIBrain Inc

(Palo Alto/Menlo Park, 2012)



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