

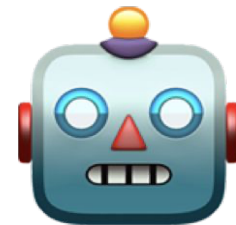
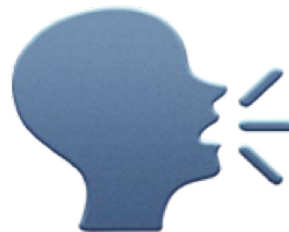
LANGUAGE NAMESPACE

Laboratory for
Computational Language Interoperability

Welcome @ Language Namespace

We develop technologies for interoperable natural language processing (NLP)

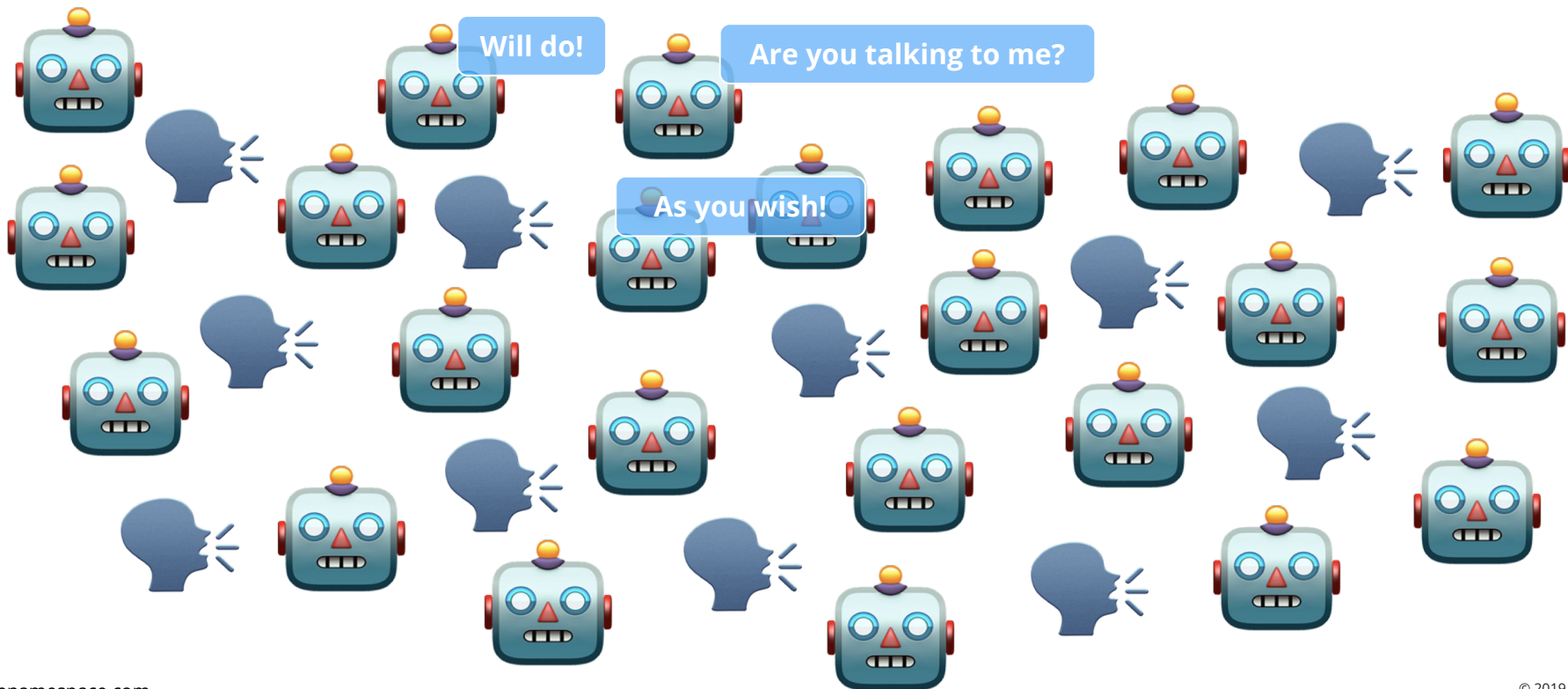
80%



of all consumer interactions will be initiated by bots
in the year 2022 Gartner

Problem: How will AIs talk about users who talk to them?

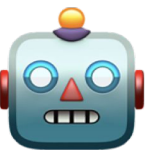
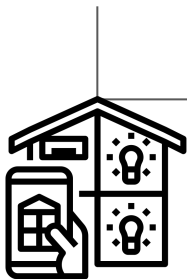
If 5+ AIs listen to every user at the same time, NLPs have to agree about contents



Challenge 1: AIs are biased, every AI has a different skill set

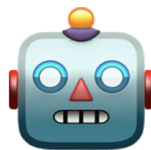
Natural language is differently interpreted by every voice technology

Hey smart home AI, I am hungry, call me a Pizza!



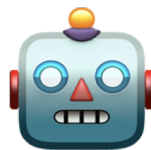
Google

This user looks for a Pizza



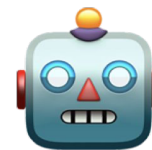
Nuance

This user is in Hungary and looks for a telephone



Bosch

Sorry, I did not get that

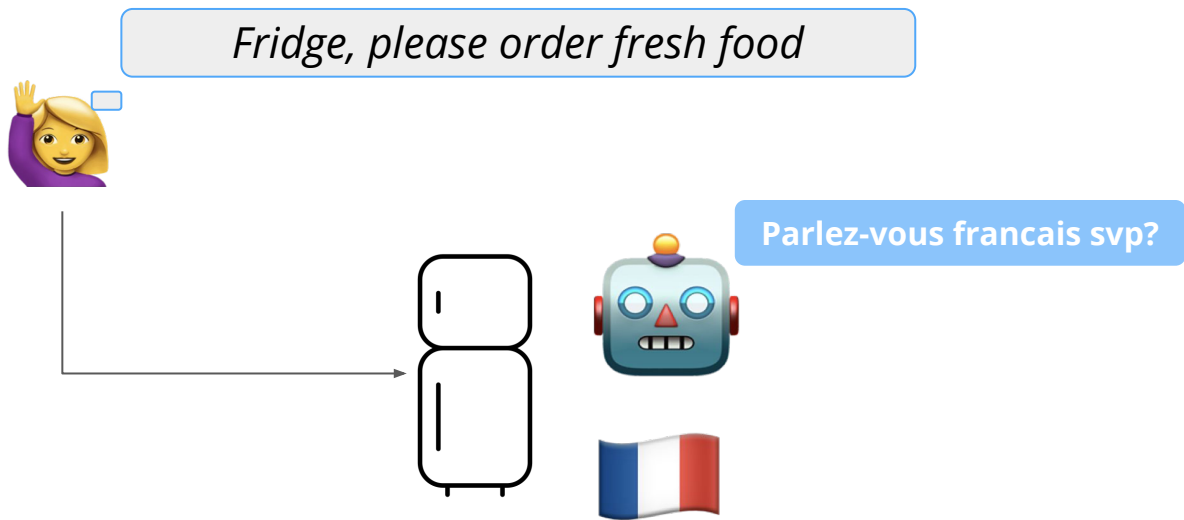


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100 AIs = 100 Opinions

Challenge 2: AIs are only local & niche intelligent

OEMs have to integrate different NLPs for each market & use case



Solution: A unified language between AIs

NLPs use a shared language to exchange information about spoken inputs



AI, I need a ride to the Airport!

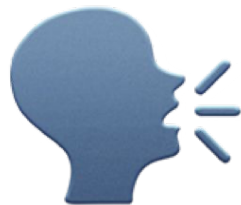
Let us agree, how we tell it to each other!



LANGUAGE
NAMESPACE

Hardware & NLPs can be faster localized for different markets

Product: A shared grammar to process spoken intents
 Voice-based user requests Ø dispatched by simplified & standardized language



Natural Language

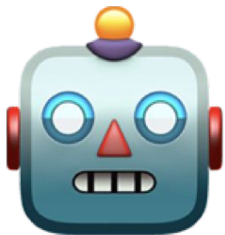


**LANGUAGE
 NAMESPACE**

Intent Catalog



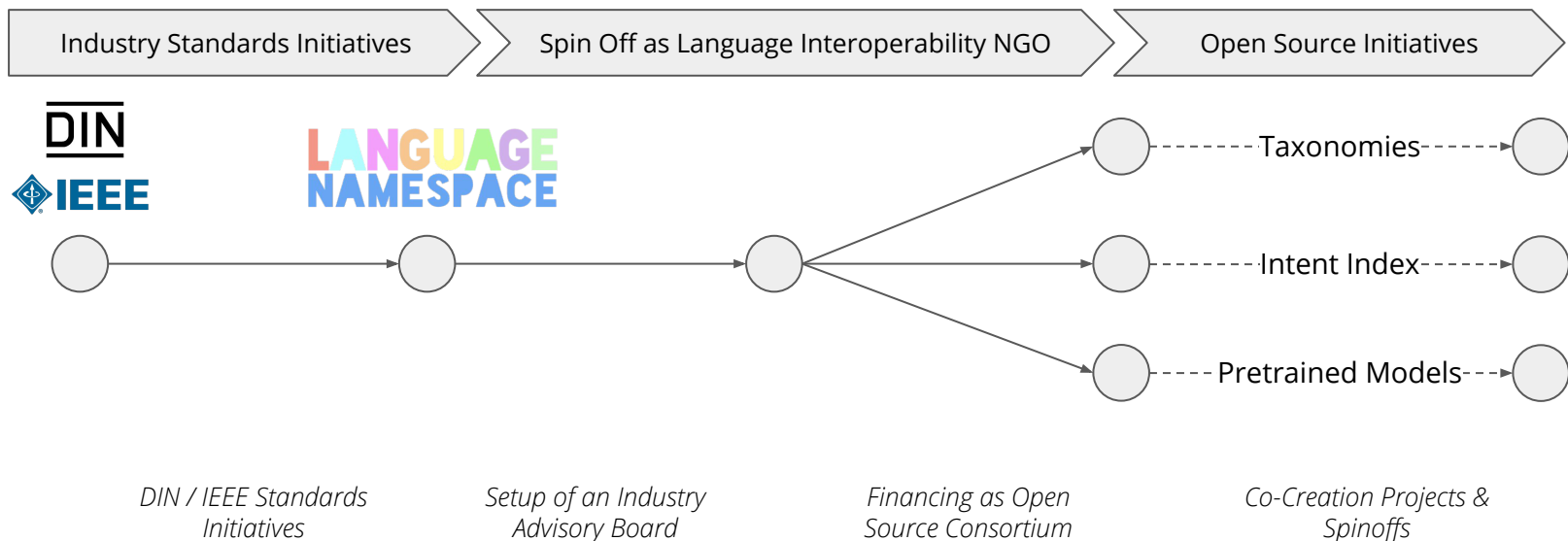
Machine Language



IN THIS HOUSE who else?	HOBBY who else?	IN THIS HOUSE who else?	HOBBY who else?
IN THIS CITY who else?	SKILL XYZ who else?	IN THIS CITY who else?	SKILL XYZ who else?
FOOD-SHARING who else?	SALE who else?	FOOD-SHARING who else?	SALE who else?
EVENT who else?	LOAN who else?	EVENT who else?	LOAN who else?
STARTUP who else?	RENTAL who else?	STARTUP who else?	RENTAL who else?
PHONE REPAIR who else?	SCHOOL who else?	PHONE REPAIR who else?	SCHOOL who else?
CYCLE COURIER who else?	HAIRCUT who else?	CYCLE COURIER who else?	HAIRCUT who else?
DELIVERY who else?	CYCLE who else?	DELIVERY who else?	CYCLE who else?
MOVERS who else?	FLEA-MARKET who else?	MOVERS who else?	FLEA-MARKET who else?
ACCELERATORS who else?	CINEMA who else?	ACCELERATORS who else?	CINEMA who else?
PHOTOGRAPHER who else?	THEATRE who else?	PHOTOGRAPHER who else?	THEATRE who else?
ASTRONOMY who else?	DOG-SITTING who else?	ASTRONOMY who else?	DOG-SITTING who else?
CHARGING STATION who else?	GARDENING who else?	CHARGING STATION who else?	GARDENING who else?
GAS STATION who else?	PAINTER who else?	GAS STATION who else?	PAINTER who else?
PAINTER who else?	TAXI who else?	PAINTER who else?	TAXI who else?
FLAT-SHARE who else?	RIDESHARE who else?	FLAT-SHARE who else?	RIDESHARE who else?
CRAFTSMAN who else?	APARTMENT who else?	CRAFTSMAN who else?	APARTMENT who else?
BOOK CLUB who else?	IT HELP who else?	BOOK CLUB who else?	IT HELP who else?
SPORTS who else?	CLEANER who else?	SPORTS who else?	CLEANER who else?
RELIGION who else?	LAUNDRY who else?	RELIGION who else?	LAUNDRY who else?
DATE who else?	SALE who else?	DATE who else?	SALE who else?
SCOOTER who else?	CAR who else?	SCOOTER who else?	CAR who else?
IN THIS COMPANY who else?	CONCERT who else?	IN THIS COMPANY who else?	CONCERT who else?
TRAVELLING who else?	BOARD GAME who else?	TRAVELLING who else?	BOARD GAME who else?
DOCTOR who else?	BAND who else?	DOCTOR who else?	BAND who else?
TAILOR who else?	CASH who else?	TAILOR who else?	CASH who else?
BABYSITTER who else?	E-SCOOTER who else?	BABYSITTER who else?	E-SCOOTER who else?
ASSISTANT who else?	ACCOUNTANT who else?	ASSISTANT who else?	ACCOUNTANT who else?
HOSTEL who else?	JANITOR who else?	HOSTEL who else?	JANITOR who else?
HOTEL who else?	LEGO who else?	HOTEL who else?	LEGO who else?
FOUND&LOST who else?	KINDERGARTEN who else?	FOUND&LOST who else?	KINDERGARTEN who else?
SEX who else?	RENOVATION who else?	SEX who else?	RENOVATION who else?
MUSIC who else?	TIMFRMAN who else?	MUSIC who else?	TIMFRMAN who else?

Opportunity: We develop the Esperanto of AI

After initiating industry standards, we now build an NLP industry association



Model reference: Why do we work as multi-stakeholder lab?

NLP technologies are currently in a state of experimental research



AI

Facebook founds AI Language Research Consortium to solve challenges in natural language processing

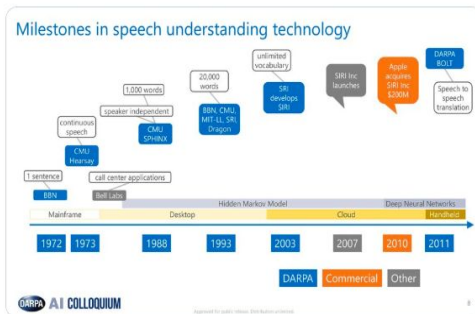
KYLE WIGGERS @KYLE_L_WIGGERS AUGUST 28, 2019 1:05 PM



Roughly three months ago, Facebook launched calls for research proposals in three subfields of natural language processing (NLP), the cross-disciplinary study of linguistics and AI concerned with computer-language interactions. It specifically sought "robust" deep learning approaches for NLP and computationally efficient NLP in addition to neural machine translation for low-resource dialects, ultimately in the pursuit of advancing cutting-edge research in machine translation.



DARPA has been in the Natural Language Processing game for a long time and taken us to the point we're at today where we can talk to our devices & get meaningful information in return. However, ongoing research stands to increase the value of NLP to national security. #Alnext

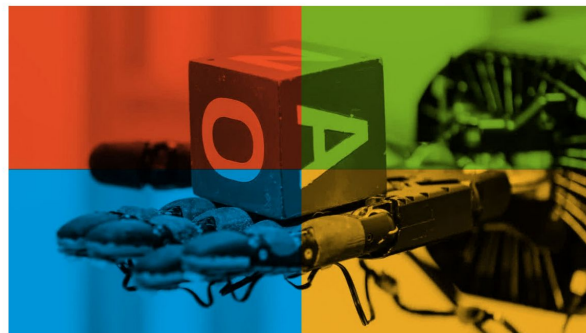


9:49 PM · Mar 6, 2019 · Twitter Web Client

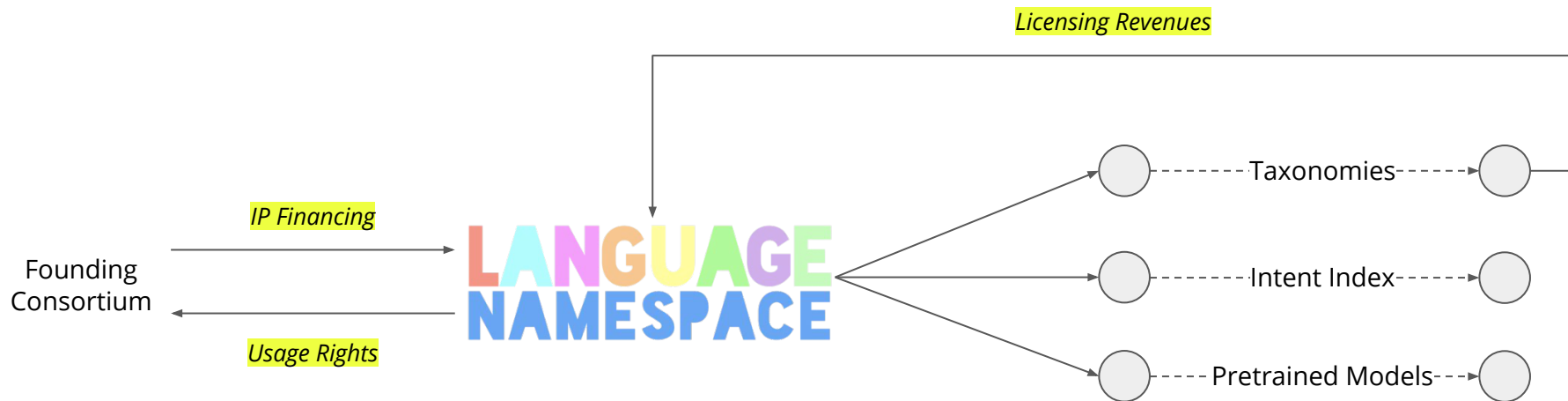
MIT Technology Review

Artificial Intelligence Jul 22

Microsoft is investing \$1 billion in OpenAI to create brain-like machines



Operating model: We develop a portfolio of NLP patents
Licensing revenues finance new research projects of Language Namespace



USP: Industry R&D collaborations on a neutral platform

LNS enables vendor agnostic NLP industry research collaborations

