

AI for Automotive

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SRI International

Menlo Park, CA

SRI International®

Independent, non-profit research institute
founded by Stanford University in 1946

- 2,000+ staff members; 2/3 advanced degrees
- \$500M+ in annual revenues

> \$4B in research over last 10 years

- 1,000 R&D projects per year
- 4,000 patents, 500 new inventions per year
- 60+ spin-off companies & 100+ licenses



SRI Spinoff Companies

Exits

INTUITIVE
SURGICAL®
ISRG (NASDAQ)

Siri
acquired by Apple

NUANCE
NUAN (NASDAQ)

redwood robotics
acquired by Google

Meta^α
acquired by
Chan Zuckerberg Initiative

LIGHTSCAPE
materials, inc. cleantech
acquired by Dow

ORCHID CELLMARK
ORCH (NASDAQ)

DESI
acquired by
Nokia

ARTIFICIAL MUSCLE
INCORPORATED
acquired by
Parker Hannifin

SENSOR
acquired by
Morpho/Sarfan

discern
acquired by
ConVerge One

lamina
acquired by
Lighting Science

SOCIAL KINETICS
acquired by
Redbrick Health

tempo
acquired by Salesforce

Summly
acquired by
Yahoo

Active

Grabit
Industrial Automation

kuato
studios
Education

SUPERflex
Wearable Robotics

KASISTO
AI for Financial Tech

abundant[™]
ROBOTICS
Agricultural Robotics

Princeton Lightwave
LiDAR Systems

Hi Lytes
Online Gaming

Gridspace
Voice Analytics

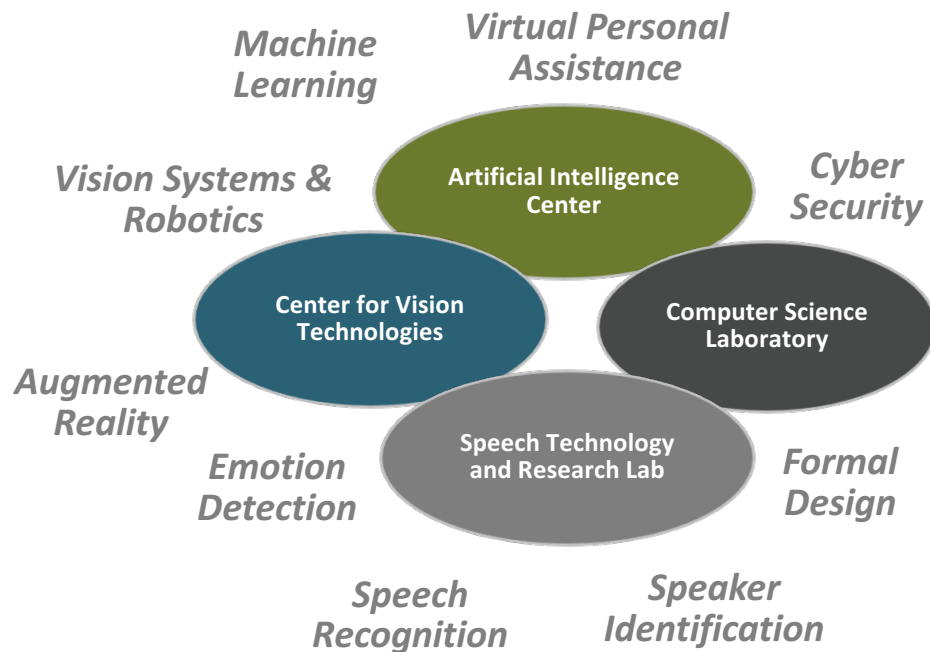
princeton IDENTITY
Biometrics

TOUT
Video Content Distribution

LEO LABS
Space Services

Averatek
Metal "print and plate"
manufacturing process

Information and Computing Sciences Division



Intellectual property

Key IP in vision, speech, information security, virtual assistant, computational biology

Licenses

VPA
DynaSpeak
ATSE
SenSay Analytics™
BotHunter
VisionIP

Ventures

Siri

tempo

kuato
studios

NUANCE

KASIST@

trap!t jist.tv™

area17

discern

SOCIAL KINETICS

3 Themes

Big Data: the power of correlation

Small Data: the power of interaction

Trusting and collaborating with AI

Big Data

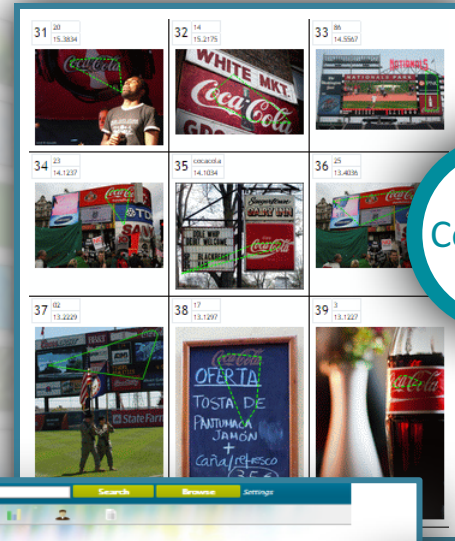


Big Data Machine Learning

Visual Understanding

BILLIONS OF IMAGES AND VIDEOS

DEEP LEARNING



CocaCola



Changing a tire

Big Data Machine Learning

Pedestrian detection



A close-up photograph of a person's hands holding a black smartphone. The person's right hand is holding the phone, while their left index finger is pointing at the screen. The background is blurred, showing a person wearing a blue shirt. The text "Small Data" is overlaid on the left side of the image.

Small Data

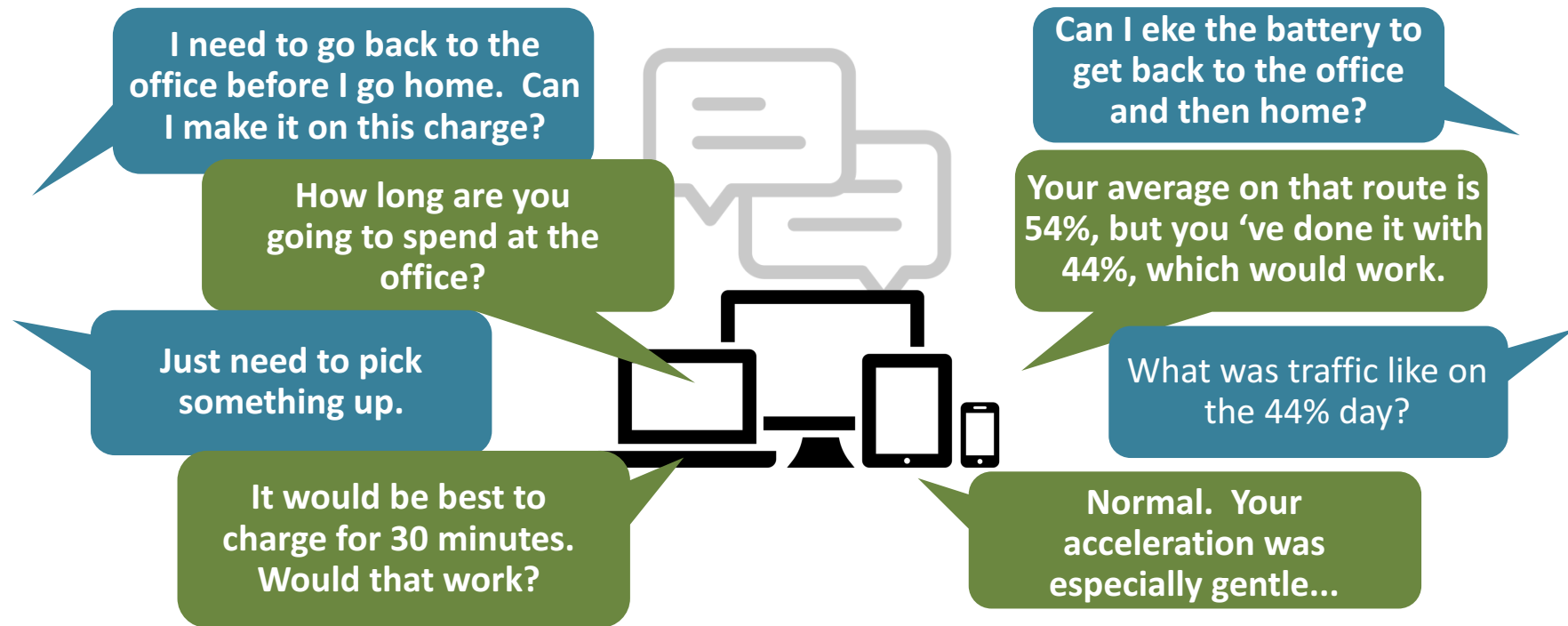


People **GENERATE** small data through **INTERACTION**



Conversation enables personalization

User style and content shapes system response



Virtual Personal Assistant Architecture



User Interface & Client Application

Domain Specific Application Resources



Acoustic &
Language
Model

Statistical
Language
Model

Domain
Specific
Ontology

Domain
Specific
Workflows

Web
Services

Output
Templates

Object and Gesture Models



Backend
Systems

General Virtual Personal Assistant Platform



Automatic
Speech
Recognition

Natural
Language
Understanding

Interpretation

Reasoning

Output
Generation

Text To
Speech
(TTS)

Image Understanding

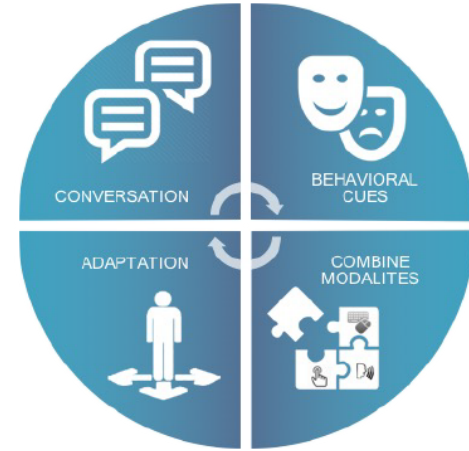
Controller

Conversation is more than words

Next Generation Virtual Personal Assistant

Combines visual and other sensor information

Understands (and responds to) emotion



With AR, VPA shifts from assistant to mentor...

- Improve efficiency through interactive step-by-step procedures



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Trusting and Collaborating with AI



As devices become more
COMPLEX and **INTELLIGENT**
we can/must delegate to them



What is your most trusted computer collaboration?

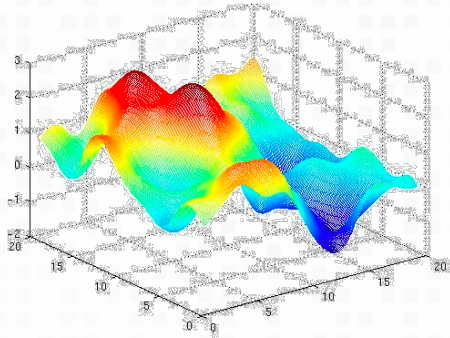




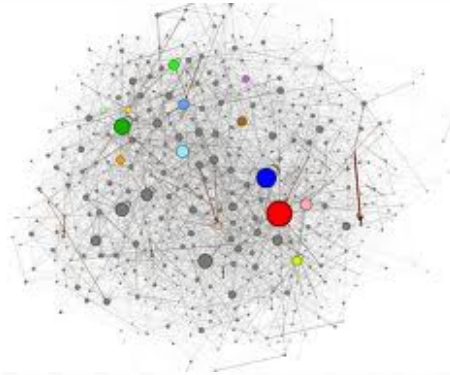
Brake pedal

Barriers to appropriate Trust

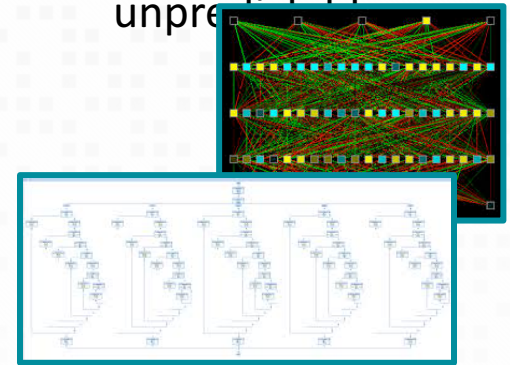
HUMANS and **MACHINES**
have different approaches
to problem solving



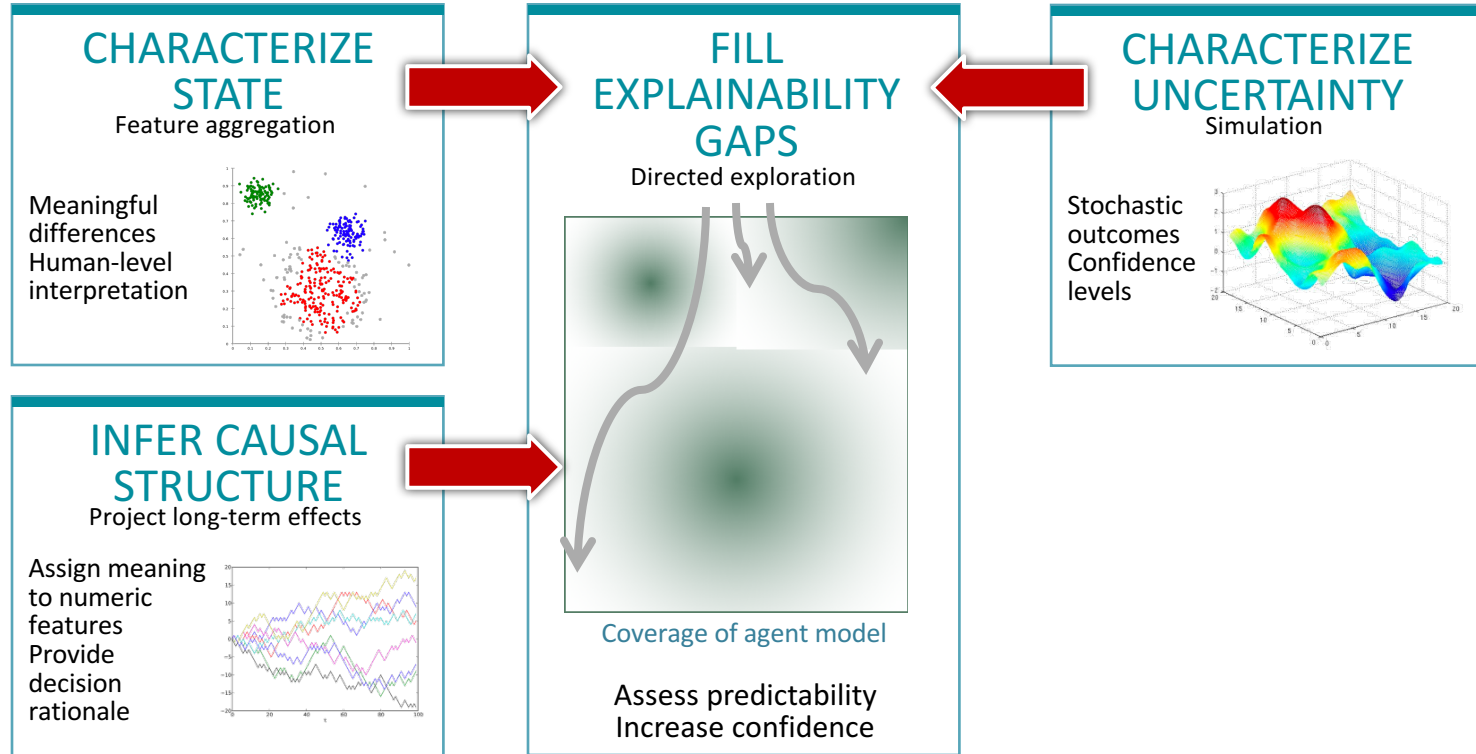
AUTONOMOUS
SYSTEMS are complex
and evolve over time



The **ENVIRONMENT** is
DYNAMIC, making
autonomy
unpredictable



Bridging the Gap



What lies ahead

Widespread
experimentation with
personalization and
emotional connection

Small data
becomes more
important for
differentiation

Trust becomes
the gating
condition for
collaboration