Institut Nicod

Impact & Valorisation



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The following is a list of projects by members of the Institut Jean Nicod. The list includes projects that involve *applications* of the cognitives sciences to societal issues, business, and research.



Research-to-society



Research-to-business



Research-to-research



Sign-Hub Horizon2020 7 Academic partners	2016-2020	Build an interactive platform for sign language content	Assessment tools Sign Language Atlas On line Grammars Archive of sign language material
Automatic Translation spoken-to-sign language IJN, RAI (Italian broadcaster), Univ. of Turin	2011-ongoing	Build the equivalent of google translate for sign languages	The same as google translate had for hearing people, plus potential applications in education.
Signing Robots IJN & Scuola Superiore Sant'Anna (Pisa)	2015-ongoing	Build an antropomorphic signing robot	Offer communication opportunities to Deaf-blind people

Carlo Geraci (DR CNRS)

Sign-Hub https://www.sign-hub.eu



Carlo Geraci (DR CNRS)

Automatic translation





Carlo Geraci (DR CNRS)

Tactile Sign Language





Roberto Casati



AMBISENSE (ANR)	2020-2024	Access to ambiguity in auditory perception. Joint project with LSP (D. Pressnitzer) and CES (V. de Gardelle)	Pupil dilation measures show signal of ambiguity in the brain, even without awareness of this ambiguity	
DIEKB (RAPID)	2019-2022	Disinformation detection In Evolving Knowledge Bases (partnership with MONDECA and AIRBUS DEFENSE & SPACE)	Creation of the VAGO tool to measure vagueness and subjectivity in texts	
(HYBRINFOX) (ANR ASTRID IA)	2022-2025	Hybridation between symbolic IA and deep learning methods to detect fake news and informational vagueness (I JN- MONDECA-AIRBUS-IRISA)	Explainable AI for fake news detection	

Paul Egré (DR CNRS, PR ENS)

The VAGO tool

"Good news, Wuhan's corona virus can be cured by one bowl of freshly boiled garlic water. Old Chinese doctor has proven it's efficacy. Many patients has also proven this to be **effective**. Eight (8) cloves of chopped garlics add seven (7) cups of water and bring to boil., Eat and drink the boiled garlic water, overnight improvement and healing. Glad to share this."



https://research.mondeca.com/demo/vago/

Paul Egré (DR CNRS, PR ENS)

Predicting bias from lexicon

 4 corpora (Isot (2), Kaggle, SignalMedia1M, ca. 120,000 documents), analyzed by VAGO tool and by a deep learning FAKE-CLF classifier(Airbus): subjective vocabulary explains part of the bias scores







Minsitère de l'Intérieur CHEMI	2018-2019	Emergency detection during ecological crises	Software for the MI open access. The first in France
Ministère de l'Intérieur FIESPI	2021-2022	Emergency detection during ecological crises	Software for the MI open access. The first in France
MITI-CNRS	2020-2021	Emergency detection during ecological crises	Software for the MI open access. The first in France







Alda Mari (DR CNRS)

Classification for emergency





Alda Mari (DR CNRS)

Results of the automatic classification (with IRIT)



Model	Binary	Three-class	Multiclass
BOWswmt	0.813	0.568	0.420
BOW _{GBM} †	0.818	0.555	0.399
Feat-SOA _{SVM} †	0.818	0.592	0.477
Feat-SOA _{GEM} †	0.810	0.548	0.406
Feat-(SOA+New) _{SVM}	0.818	0.594	0.467
Feat-(SOA+New) _{GBM}	0.797	0.546	0.428
CNN _{basic} †	0.819	0.630	0.477
BERT _{base} *	0.817	0.654	0.549
FlauBertham*	0.829	0.653	0.600
CNNshift	0.823	0.574	0.501
BERT _{tunedLM}	0.825	0.647	0.572
BERTMACHMANLP	0.817	0.665	0.577
FlauBert _{tanedLM}	0.803	0.594	0.570
FlauBertmatitask	0.832	0.654	0.631
CNN _{shift} +Feat _{TF-IDF} †	0.775	0.535	0.383
CNN _{shin} +Feat _{meta}	0.823	0.608	0.468
FlauBert _{base} +Feat _{meta}	0.829	0.618	0.591
FlauBert modLM+Featmeta	0.832	0.595	0.567
FlanBertameter	0.810	0.627	0.584

Roberto Casati

Table 7: Results of out-of-event testing in terms of macro F1-score. † are state of the art baselines while * are transformers with basic architectures used here as strong baselines.



Reputation Lab IUSS Pavia -IJN	2018-ongoing	Reputation analysis for corporate business	A multi-dimensional model for measuring corporate reputation
PeriTia - Policy, Expertise and Trust in Action - Horizon 2020	2020-2023	A European project for analysing trust and distrust in experts	A toolkit for improving trust in experts
GENIA - Gender and Artificial Intelligence (CNRS funding + Bielefeld University)	2015-2017	Analysis of the gender cues and biases for artificial intelligence	Improving the quality of AI products by reducing biases
SESAME Carnot Cognition (+ Mari + IRIT Toulouse)	2018-2020	Automatic Detection of Sexism, corpus de Tweet	Annotated Corpus for Sexism Detection in French









Gloria Origgi (DR CNRS)



Dimensione più "fredda"

25% = Peso sul giudizio reputazionale

Gloria Origgi (DR CNRS)







Chambon

(Application for bourse Cifre) with company Open Source Politics	2022-2025 co-supervised with Cédric Paternotte	Collective decision procedures	Guidelines for participatory democratic processes
Capgemini (industrial collaboration) co-led with Valérian	2021- ongoing	Human-Machine Interaction (HMI)	Sense of agency in HMI





Elisabeth Pacherie (DR CNRS)



Opensourcepolitics

l'expérience démocratique

Construisons ensemble les **processus participatifs de demain à la hauteur de vos ambitions :** budgets participatifs, conventions citoyennes, tirages au sort, textes participatifs, pétitions...

Prenez rendez-vous



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School of Collective Intelligence (Co- Founder)	2019-	Creating a university department focused on understanding and improving collective intelligence.	Creating a high impact research group, doctoral program, masters program, and executive training program
Perception publique	2017-2019	Consultancy Start Up	
What Africa Thinks	2021-	Creating a data collection infrastructure in Morocco.	An enhanced ability to collect human response data from the African continent.
The Psychology of Sludge (Bourse CIFRE with private consulting company, DITP, Ministère du Travail)	2019-2023	Understanding psychological barriers to reducing administrative "sludge," and the development of CI methods to support sludge reduction	Less paper work, less frustration, less waste of public money, greater access to public subsidies





Perception Publique





Perception Publique Institut d'études cognitives

Programs

Research





Teaching

Impact

New frontiers in the science of collective intelligence, from collaborative learning to prediction markets, cultural mapping, and social computing.

School of Collective Intelligence

The world's first accredited Masters in Collective Intelligence (2 years). Doctoral and postdoctoral programs. 10-month Executive Master for full-time professionals.

Discover our full Program









What Africa Thinks



Sludge Reduction in Academia

Radical simplification of administrative requirements to access social welfare program. 4 million new recipients due to change! But 500,000 not normally eligible.

"L'administration envisage un autre système d'attribution de la prestation qui serait plus **susceptible à la fraude** afin d'éliminer le non-recours et réduire les coûts administratifs de la procédure."

VS.

"L'administration envisage un autre système d'attribution de la prestation afin d'éliminer le non-recours et réduire les coûts administratifs de la procédure. Cela permettrait effectivement de **garantir la sécurité et le bien-être** des citoyens face à des aléas imprévisibles."



Cognitive Football



PERCEPTUAL AND COGNITIVE COMPONENTS OF SOCCER IQ

Appresentation of visible players/objects Appresentation of peripheral/ out of view players Spatial Awareness Anticipation of movement into open space Integration of dynamic scene processing for fast decision and execution







Anr BEHAVIRAL	2020-2021	Using cognitive science to understand attitudes towards COVID 19	Many observational studies Review of ways of fighting vaccine hesitancy Development of tools to fight vaccine hesitancy
Anr SCALUP	2021-2024	Scaling-up science communication	Better understanding of the resistance to scientific consensus Better ways of communication the scientific consensus
Bourse thèse CNRS Science communication for and by citizens	2021-2024	Understanding how citizens communicate scientific information	Better understanding of the causes and effects of scientific discussions among citizens



Hugo Mercier (DR CNRS)

- BEHAVIRAL project (co-led with Coralie Chevallier)
- Development of a chatbot to address vaccine hesitancy

Roberto Casati

Bonjour, je suis un petit robot conversationnel.

Avez-vous des questions sur le vaccin contre la Covid-19?

04/01/2021 10:20

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Est-ce qu'on a assez de recul sur les vaccins contre la Covid-19?

04/01/2021 10:22

Par rapport aux vaccins précédents, la mise en circulation de certains vaccins contre la Covid-19 est très rapide. Nous devons cette rapidité à la mobilisation de centaines d'équipes de recherche et de volontaires du monde entier.

Cependant, tous les vaccins, y compris les vaccins contre la Covid-19, passent par les mêmes procédures avant d'être distribués.

Les essais ayant commencé il y a plusieurs mois, nous avons désormais un bon recul. En effet, les effets indésirables des vaccins surviennent quasiment toujours au cours du <u>premier</u> <u>mois</u> sulvant l'administration du vaccin.

Je veux en savoir plus sur le recul que l'on a sur les vaccins contre la COVID-19.

Est-ce que les vaccins sont développés de manière trop précipitée ?

Connalt-on assez cette maladie pour élaborer un vaccin súr ?





 Interacting with the chatbot led to a 20% decrease in intention to not get vaccinated, and a 37% increase in positive attitudes towards COVID-19 vaccination



Hugo Mercier (DR CNRS)





WarnerBros-HBO (industrial collaboration)	2021- ongoing	Using cognitive sciences and computational approaches to quantify, understand and predict the evolution of fictions	Help creative and cultural industries to make choices in the production and distribution of fictions (movies, series, etc.)
Bunka (start-up in data science, ongoing application at the prematuration programm)	2021 - ongoing	Aggregate and analyse online media and social network to quantify and visualize cultural preferences using Knowledge Graphs and data science	Help creative industries to understand their market
PassCulture	2021 - ongoing	Computational social science to quantify the diversification of cultural consumption	Help the the Cultural sector to evaluate the impact of public interventions







Nicolas Baumard (DR CNRS)

 WarnerBros-HBO (industrial collaboration)

A METHOD TO ANALYSE CULTURAL BEHAVIOUR

Step1

Extracting Data on Cultural Consumption or production

Step 2

Using Data Science to analyze and visualize cultural data

Step 3

Using Cognitive Science to make sense of the dynamics of preferences and make predictions



Roberto Casati



EvidenceB (EdTech company)	project submitted, Ministère de l'éducation nationale, de la jeunesse et des sports	Using cognitive science to define educational strategies and solutions for remediation for learning mathematics in the first three years of secondary school	Application of these solutions in the classroom
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Valeria Giardino (CRCN CNRS)







2021 English to French tr Support for parents children: Common of informed, evidence	Instation:There exist high-quality resources for parents of deaf children, but these are often in English, so are inaccessible to French parents. Making high-quality translations available fills this lacuna.
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Jeremy Kuhn (CR CNRS)





What will give my child the best chances of learning to talk?

How can my child learn sign language if I don't sign myself?

Salvador Mascarenhas (Pr, ENS)



ANR LANG- REASON 2019-2022 Improving reasoning with psycholinguistic manipulations	Many human reasoning "errors" are due to pragmatic enrichments. We recruit experimental methods such as <i>priming</i> to increase <i>literal</i> <i>interpretations</i> , which block certain fallacies and promote inferences closer to standard logical norms.
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Capgemini (industrial collaboration)	2021- ongoing	Human-Machine Interaction (HMI)	Sense of agency in HMI	
Possible Future (innovation start-up)	2021 - ongoing	Prospective	Which cognitive tasks would we offload to assistants or artificial intelligence without sacrificing safety, intimacy, or knowledge?	
Fondation de France CHU Pitié-Salpétrière	2021 - 2024	Translational/Cli nical research	Susceptibility to social influence in Borderline Personality Disorder	
MITI-CNRS (80 Prime)	2020 - 2023	Behavioural economics	How do humans learn in strategic environments?	
ONERA (Aerospace Lab) - 2 bourses de thèse	2018 - ongoing	eXplainable Artificial Intelligence (XAI)	Defining the content of explanations to be implemented in AI to improve human-AI interactions.	

Valérian Chambon (DR CNRS)

 Leveraging sense of agency to improve performance and acceptability in human-machine interactions (Capgemini) - coled with Elisabeth Pacherie



 Communicating the AI's confidence in its decision increases its explainability (ONERA Aerospace Lab)







Macaque40	2016-2020	Can non-human primates adapt monetary behaviors?	Field and lab experiments showing economic behaviors emergence at individual and group levels among species of macaques and capuchin monkeys.
NEUROMONEY	2016-2021	How monetary concepts and exchanges are encoded in the brain.	Showed how monetary behavior acquisition relies on relatively basic cognitive capacities and proposed a novel computational model thereof (PNAS 2018).
RANGE	2021-2025	The behavioral and computational nature of decisions dependent on context.	Will shed light on modelling dependencies between decision-environments and apparent inconsistencies of choices. Will apply to environmental issues.

Sacha Bourgeois-Gironde (PR)





If natural entities become persons in the law, how does this change our relationship to them?

Do we make better environmental decisions?



ANR DIS-Covid	2020-2022	Corpus analysis of communication during Covid Crisis, focusing on disorientation	Guidelines about communication during crisis	
MITI-CNRS	2020-2022	Ergonomic analysis of citizen science device for marine plankton observation	Usability improvement, increase in community of users	
Cifre RATP	2020-2024	Corpus analysis of tweets of RATP lines during disrupted service	Usability improvement	





ANR Dis-Covid

Analysis of institutional flyers

Analysis of tweets and news corpus





MITI-CNRS

In situ study of ergonomy of observation instrument







Etude de la désorientation des voyageurs mass transit lors de situations perturbées

Plus d'un million de tweets sont échangés chaque année entre la RATP et ses voyageurs, notamment au travers d'un maillage informationnel d'un compte twitter par ligne ferrée. La RATP communique sur les perturbations en cours en temps réel grâce à ces comptes.

De manière inédite pour la RATP, cette source de données est complètement extraite et cartographiée dans le cadre de ce projet. Des indicateurs de pilotage son générés pour la direction générale. L'expérience client est expertisée pour mieux prioriser les irritants principaux des voyageurs en matière d'information voyageurs. (C'est-à-dire, l'information qui sert à s'orienter sur le réseau.)

Des questionnaires de recherche seront envoyés dans les prochains mois aux personnes témoignant de situations perturbées pour étudier si les caractéristiques cognitives de la désorientation spatiale sont également celles que l'on retrouve pour la désorientation temporelle des voyageurs en situation perturbée sur des modes de mass transit.



