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When sound processing meets data protection

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CNIL

COMMISSION NATIONALE
INFORMATIQUE & LIBERTÉS

PROTÉGER les données personnelles

ACCOMPAGNER l'innovation

PRÉSERVER les libertés individuelles

When sound processing meets data protection

François Pellegrini & Félicien Vallet

CNIL.

WHO IS THE CNIL?

The CNIL (1)

- * "Commission nationale de l'informatique et des libertés"
 - * French Data Protection Authority
- * Created by the Law n° 78-17 on "Informatics & Freedom" of 6 January 1978
 - * Independent Administrative Authority
 - * Belongs to the Executive branch but independent from the Government and empowered to oversee it
- * 18 Commissioners and 230+ staff
 - * Plenary sessions + Restricted Committee

The CNIL (2)

- * Article 1 of the French “Informatics & Freedow” Law:
 - * “Informatics must be at the service of every citizen. Its development must take place within the framework of international cooperation. It must not interfere with human identity, human rights, privacy, or individual or public liberties”

Personal Data

- * What is "data with personal character"
 - * Any information related to an identified or identifiable person, directly or indirectly,
 - * in particular relating to an identification number
 - * E.g.: social security number, phone number, etc.
 - * or to elements related to the concerned person (data subject)
 - * E.g. : biometrics, psychological character, etc.
- * Even more so : "data with inter-personal character"
 - * Data is produced and exchanged for interaction

Rights of data subjects

- * Right to object
 - * May be restricted, depending on the file
- * Right of access
 - * Indirect access, for some police files
- * Right to request rectification
 - * Data must always be accurate
- * Right to be de-listed
- * Right to data portability
 - * Revolutionary right brought by the GDPR

The GDPR

- * More an evolution than a revolution
- * Formalization of some key principles
 - * Accountability instead of prior authorization
 - * Data protection by design, data minimization, etc.
- * Creation of the Data Protection Officer
- * Strengthened European collaboration
 - * Through the European Data Protection Board
- * Fully applicable to non-EU data controllers

The CNIL in action(s)...

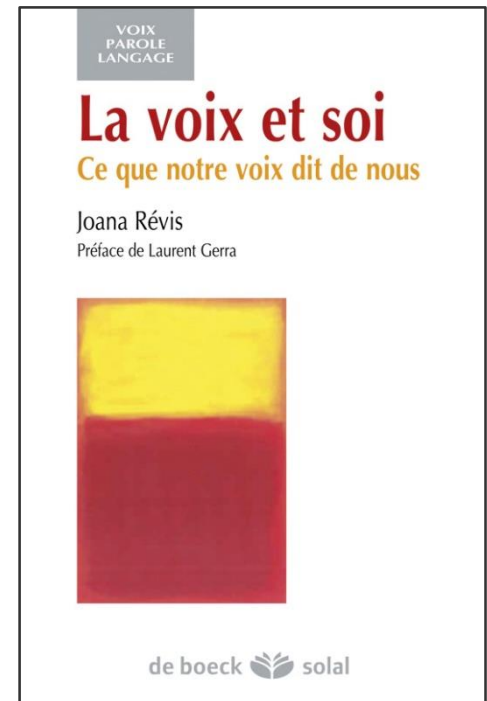
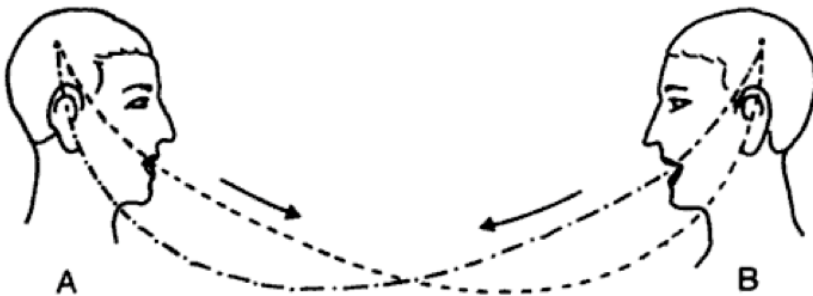
- * Advising and regulating
 - * Advice on draft laws, Authorizations, ...
- * Accompanying compliance
 - * Appointment of DPOs, ...
- * Protecting data subjects
 - * Verification, indirect right of access, ...
- * Investigating
 - * On-site or on-line
- * Rendering orders and issuing sanctions
- * Informing
 - * +8M visits to the CNIL website in 2019

CNIL.

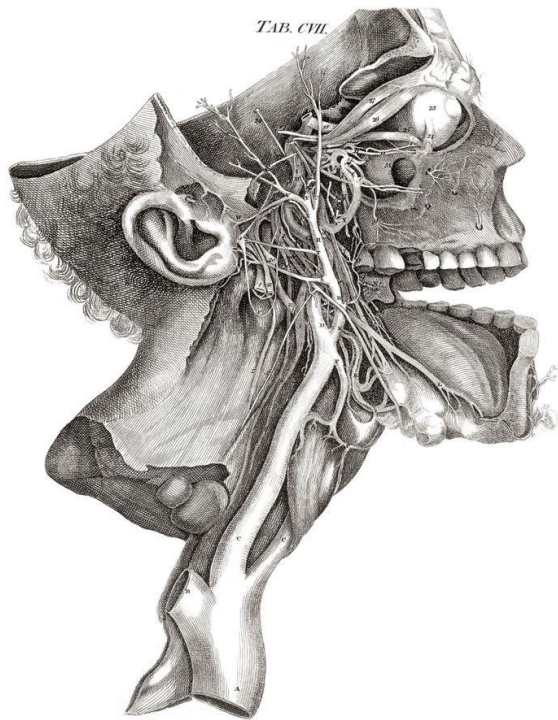
WHAT ABOUT THE VOICE ?

A private piece of data

- * Something we use daily
- * Something that defines us
- * Something that "says" a lot



A volatile piece of data



- * Something intangible
- * Yet that can be recorded
- * As for image, voice right exists

A reproducible piece of data

- * Usurpation, an old issue
- * Likely to evolve in the coming years



An intellectual property protected piece of data



* Vocal performance is a creation of form exhibiting originality, thus eligible as a work in author's right

* Voice acting, a specialized profession

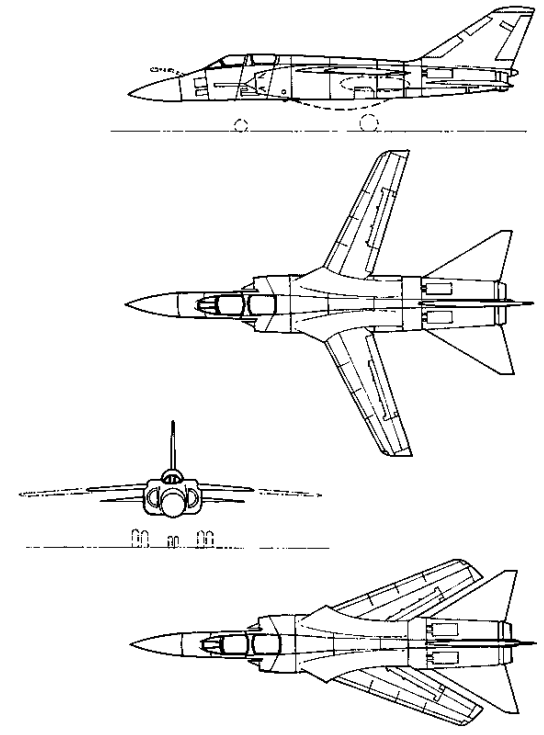


* But with new technologies, new questions are raised



A variable geometry data

- * Personal data, a broad scope
- * Many information can be extracted from the voice signal
- * In some cases, deemed "sensitive data"
 - * As of art. 9 GDPR
 - * When used for biometry



CNIL.

WHERE DOES CNIL STAND?

Biometrics (1)

- * Biometric data is a highly sensitive kind of data
 - * Not revocable
- * Two mains uses of biometry
 - * Authentication
 - * Identification

Biometrics (2)

- * Identification does require a centralized database, while authentication does not
 - * E.g.: biometric passport
- * Architecture does matter!
 - * Data protection by design
- * CNIL promotes biometry “at the hand of the persons”
 - * People should always retain control over their biometric data

Voice Biometrics

- * Many attempts to use biometry as a “quick” authentication means
 - * Yet only one of the three factors
 - * Inherence, possession, knowledge
 - * Not always the most secure one
- * CNIL authorized several pre-GDPR experiments by banks, etc.
 - * Yet without the creation of huge stocks of biometric data
 - * Biometry “at the hand of the persons”
 - * Biometric data are encrypted with user-specific keys

Voice Assistants (1)

LINC
Laboratoire d'Innovation
Numérique de la CNIL

DOSSIERS EXPÉRIMENTATIONS PUBLICATIONS À PROPOS DE LINC

[dossier] Assistants vocaux
25 juin 2018

L'espion qui me logeait : assistants vocaux et objets connectés dans la maison

Installer des assistants vocaux et y connecter l'ensemble des objets de son foyer répond à la promesse des constructeurs de rendre son foyer « intelligent ». Une journaliste de Gizmodo a tenté l'expérience.

Captation des émotions : comment vous le direz pour être retenu contre vous...

Les applications d'analyse de la voix et de captation des émotions sont de plus en plus nombreuses sur le marché. Quelle est leur fiabilité et qu'en est-il de la protection de la vie privée et des libertés ?

Les droits de la voix (2/2) - Quelle parole pour nos systèmes ?

Alors que nous donnons chaque jour de la voix auprès de nos interfaces, il est essentiel de faire un état des lieux des problématiques juridiques entourant le traitement de ces données éminemment personnelles.

[itw Chloé Clavel] Les machines ne font « pas encore » mieux que les humains pour interpréter les émotions

Professeure associée en affective computing à Télécom ParisTech et spécialiste des systèmes d'interaction humain/agent, Chloé Clavel nous présente ce champ de recherche et nous en expose les différents enjeux.

Les droits de la voix (1/2) : Quelle écoute pour nos systèmes ?

Alors que nous donnons chaque jour de la voix auprès de nos interfaces, il est essentiel de faire un état des lieux des problématiques juridiques entourant le traitement de ces données éminemment personnelles. Voici le premier de nos deux articles consacrés à la question.

Nicolas Obin : "La voix artificielle rend la machine plus humaine"

Où en sont les technologies de synthèse vocale, les défis restant à relever et dérives potentielles ? LINC s'est entretenu avec Nicolas Obin, chercheur à Ircam, CNRS, Sorbonne Université et spécialiste du domaine.

Quand les assistants vocaux entendent des voix

Plusieurs études menées par des chercheurs, aux États-Unis et en Chine, ont permis de démontrer que des messages inaudibles par l'oreille humaine peuvent être envoyés à des assistants vocaux, qui non seulement les entendent, mais leur obéissent.

« Un fossé entre les discours et la réalité des usages »

Entretien croisé avec Julia Velkovska et Moustafa Zouhar, respectivement sociologue et ergonomiste au Laboratoire SENSE (Sociology and Economics of Networks and Services) d'Orange Labs.

"Notre voix porte en elle toutes les intentions qui sont les nôtres"

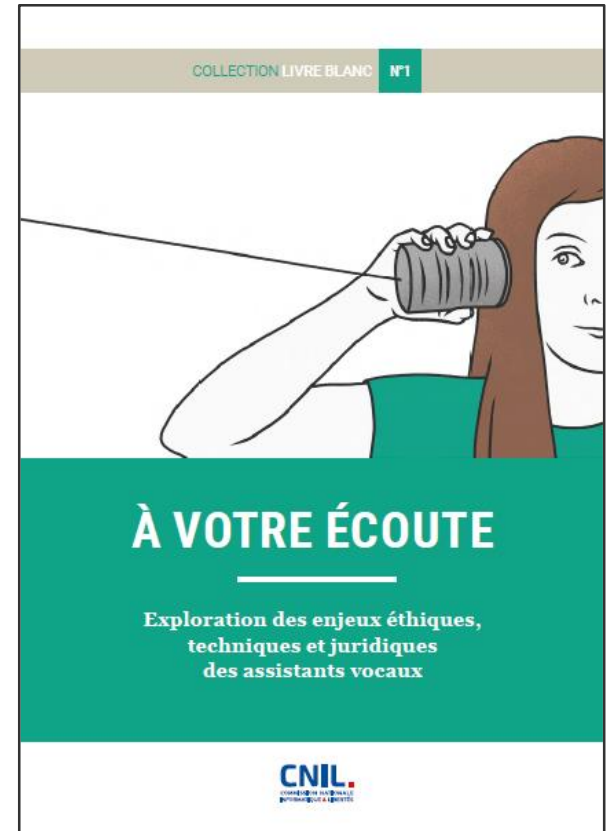
« La voix n'est pas une biométrie classique »

- * Study started in 2017
- * Tests at LINC, CNIL's lab



Voice Assistants (2)

- * September 2020: white paper on voice assistants [EN soon]
- * Use-cases for professionals
- * Good practices for :
 - * Voice assistant designers
 - * Application developers
 - * Voice assistant integrators
 - * Voice assistants "deployers"
 - * Users

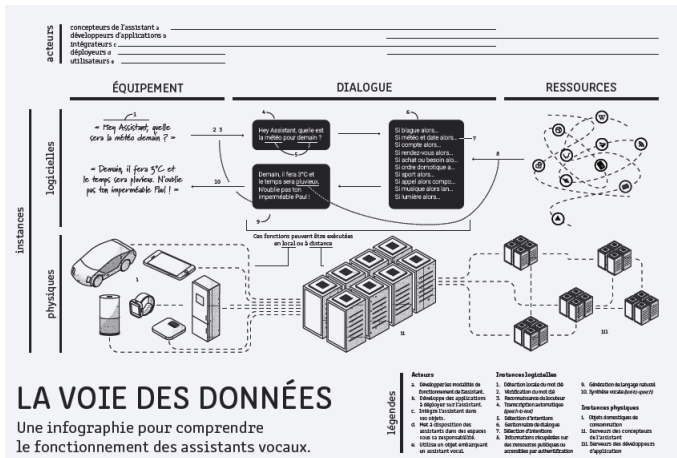


Voice Assistants (3)



* 4 major pieces of advice for privacy-friendly voice assistants:

- * “Keep positive frictions”
- * Prefer the local to the remote
- * Ensure the means of control
- * Adapt to the voice medium



CNIL.

AND TOMORROW ?

Speech processing + Privacy by design = ?

- * A new scientific field
- * Research projects financed in France and EU
- * A strategic positioning for some economic actors



COMPRISE

Cost-effective, Multilingual, Privacy-driven voice-enabled Services

Open questions...

- * What about the use of voice samples to infer the health condition?



Carnegie Mellon University

COVID Voice Detector

Record your voice to help AI beat Covid!

Carnegie Mellon University is collaborating with researchers around the world to develop an automated AI system that can detect signatures of Covid-19 infection in the human voice.

In order to build the system we require a large number of voice samples -- from Covid patients, from healthy people, and from people affected by other ailments.

Please sign in and record your voice, to contribute to this effort.

[→ Login](#)

Open questions...

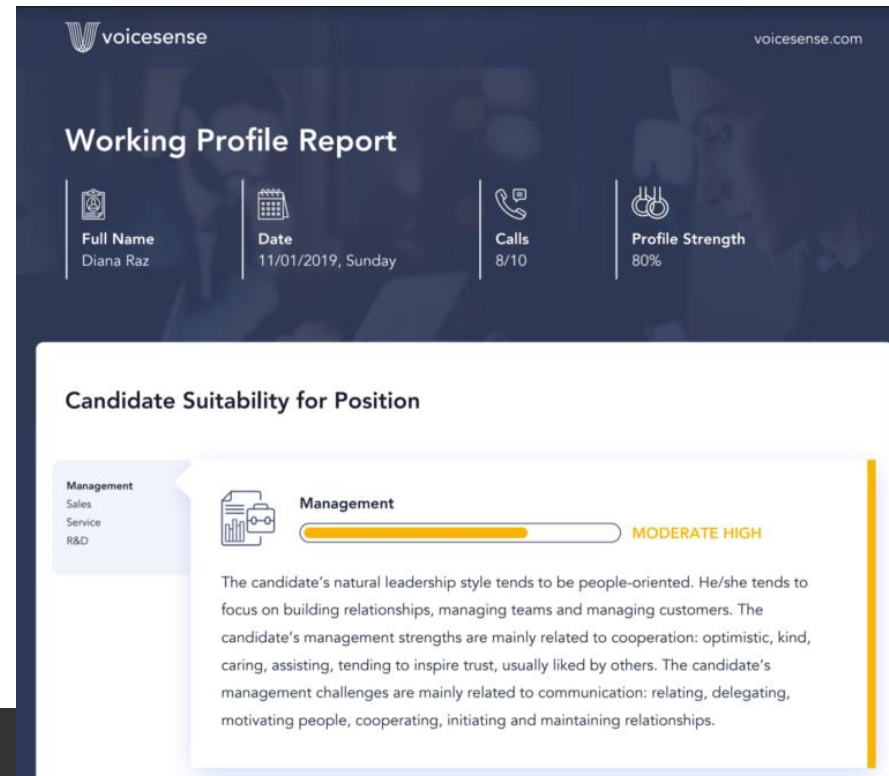
- * What about the automated evaluation of emotions?
- * The quantification of “social skills” in a recruitment process?



WHY YOU SHOULD CONSIDER
EMOTIONS ANALYTICS





Emotions Analytics change the way we interact with our machines and ourselves – forever. By decoding human vocal intonations into their underlying emotions in real-time, Emotions Analytics enables voice-powered devices, apps and solutions to interact with us on an emotional level, just as humans do.

1.61M Voice Samples **170** Countries **8** Granted Patents **21** Years of Research



voicesense voicesense.com


Working Profile Report

 Full Name Diana Raz	 Date 11/01/2019, Sunday	 Calls 8/10	 Profile Strength 80%
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Candidate Suitability for Position

Management

Sales
Service
R&D

 **Management** MODERATE HIGH

The candidate's natural leadership style tends to be people-oriented. He/she tends to focus on building relationships, managing teams and managing customers. The candidate's management strengths are mainly related to cooperation: optimistic, kind, caring, assisting, tending to inspire trust, usually liked by others. The candidate's management challenges are mainly related to communication: relating, delegating, motivating people, cooperating, initiating and maintaining relationships.

Open questions...

- * What rights for a post-mortem use of voice characteristics?



AJ+ @ajplus · 29 oct.
Parkland victim Joaquin Oliver urged people to vote in a video that used artificial intelligence to imagine what he'd look like today.

Oliver was killed in 2018 in the MSD high school shooting.



CNIL.

THANK YOU

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