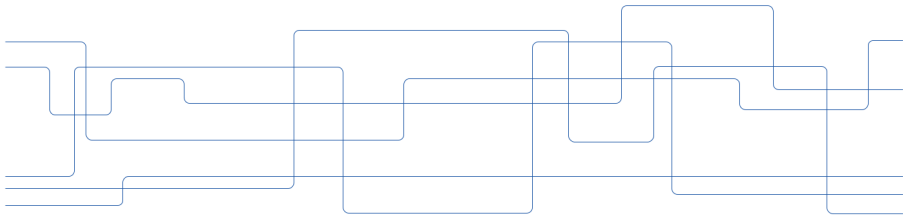




# Reviewing and presenting Ethical guidelines

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- 1 Introduction: Computer Ethics
- 2 Previous/ongoing work on ethical guidelines
- 3 Field-specific theory and guidelines
- 4 Grounding examples
- 5 MIR: ethical problems and guidelines

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- Computing often seen as problem solving exercise (Gotterbarn, 2004).
- Often no consideration of potential negative impacts on society or interactions with other systems in real use cases (Huff, 2003).
- Huff (2003) conceptualizes the constraints on system design along four levels. Higher levels relate to increasingly wider circles of society:

Level 4	Larger “impact on society” issues ( <i>e.g.</i> privacy, property, power, equity)
Level 3	Anticipated uses and effects: interactions with other technologies and systems
Level 2	Company policies, specifications, budgets, project time-lines
Level 1	System design issues, trade-offs in design and performance

- Tool design influenced by personal choices of developers, funding politics, and other aspects beyond efficiency and productivity (Winner, 1980).
- → technology is not value-neutral.
- R&D in MIR (and in computer engineering, generally):
  - Guided by value judgements concerning system design constraints.
  - Considerations of interactions with other systems and society remain yet to be performed.

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# IEEE Global Initiative on Ethics of Autonomous and Intelligent Systems, 2019<sup>1</sup>

- Ethically Aligned Design (EAD), identifying issues and providing recommendations in key areas, *e.g.*:
  - Methodologies to guide ethical research and design:
    - 1 Strive for interdisciplinary education and research on ethical aspects.
    - 2 Consider culturally distinctive values for embedding into AI design.
    - 3 Poor documentation hinders ethical design (document your systems and data!).
  - Personal Data and Individual Access Control:
    - 1 Enable personalization and meta system learning concurrently without the permanent collection and storage of **personal data**.
    - 2 Allow individuals to exercise control over use of personal data at the time the data is used.
  - Affective Computing:
    - 1 Ethical values/norms in a knowledge base that should be used in a specific cultural context.
    - 2 It is necessary to survey and analyze the long-term interaction of people with affective systems.

<sup>1</sup><https://standards.ieee.org/industry-connections/ec/autonomous-systems.html>

# IEEE Global Initiative on Ethics of Autonomous and Intelligent Systems

- IEEE Global Initiative is also developing the Ethically Aligned Design University Consortium (EADUC).
- Two of the main principles:
  - 1 Accountability: Ensure that designers and operators of A/IS are responsible and accountable.
  - 2 Transparency: Ensure A/IS operate in a transparent and explainable manner.
- Reduce biases by including members of diverse social groups in planning and evaluation, and integrating community outreach into the evaluation process.
- Possibility for certain types of art forms to be algorithmically suppressed in VR/AR: new forms of copyright needed!



- Presented by Emilia.

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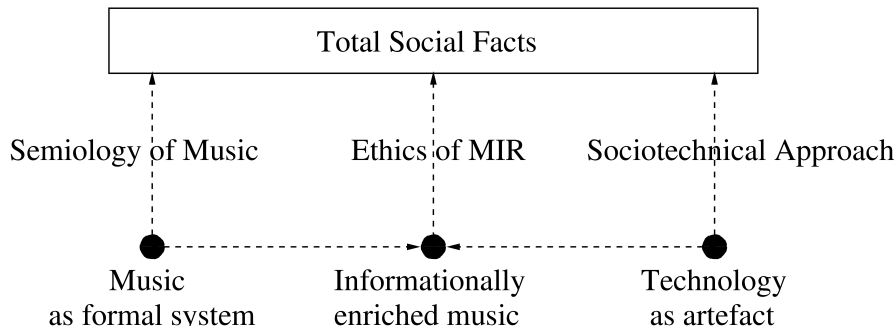
## Two theories:

- 1 Sociotechnical computerethics (Johnson, 2009): A piece of software is not an isolated object, but a combination of human arrangement, technical artefacts, and social practices.
- 2 Music Semiology (Molino, Underwood, & Ayrey, 1990): In music analysis, take into account music as data, as well as the creative/performative and receptive aspects.

# A theoretical basis

## Two theories related for ethics of MIR

- 1 Sociotechnical computerethics (Johnson, 2009).
  - 2 Music Semiology (Molino et al., 1990).
- Informational enrichment (Moor, 2003) as process that connects these two: through digitalization, concepts (money, war, music) change their meaning.



# Outline

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- Adaetal apply AI to model and generate music in a traditional style:
  - They use an archive of traditional music created for other purposes.
  - They have their AI create 100,000 new "compositions" in that style.
  - They record and release a commercial album of several "compositions", but under an invented story.
  - Adaetal are rewarded with media attention, research publications, grant money, job offers.

- Rhythmic similarity
  - Drumetal derive a method for rhythmic similarity, which makes use of beat tracking in pre-processing.
  - They focus on Fourland popular music in evaluation.
  - Abletal incorporate this tool into Digital Audio Workstations.
  - Producers from Fiveland discover that the tool somehow seems not to work for them.
  - If these tools work best for 4/4 meter, it potentially pushes music production in less diverse directions.

- Automatic copyright control
  - In Lalaland a cover-song detection system is employed to check all broadcast, in order to collect royalty fees.
  - Traditional lalalandian music not copy-right protected, and very popular.
  - The new systems classifies all lalalandian music as being written by Beyonce.
  - Lalalandian stations therefore reduce the amount of broadcasted music.
  - Lalalandian musicians are, however, proud that Beyonce used their music and dance styles (without crediting).



- Automatic music recommendation
  - Large number of artists in the collection of Spotetel - a streaming provider - never gets recommended.
  - Potential reasons (the provider forces us to guess):
    - 1 Lack of user data.
    - 2 Aspects of musical style (but which?...)
    - 3 Artist not associated with major label.
  - Works best for music that is commercially successful, and is in the style that tools were developed for.

- Flawed dataset/experiment
  - Jimetal develop a new audio feature, and document its superior performance on genre recognition on a widely used dataset.
  - However, the published results are revealed to be wrong, due to errors in the method and problems with the data.
  - Jimetal will be tenured if they obtain sufficient citations.
  - Is this specific to music in any way?

- Targeted profiling
  - Arousetal develop an algorithm that based on geolocation, time of the day, and listening history of a user compiles playlists targeting personalized mood regulation.
  - Spotetal incorporate this algorithm into their streaming service, sharing (anonymized) data with third parties.
  - Which aspects of our musical life may be private?
  - Which depth of profiling is needed to identify a user?

- Mood manipulation

- Arousetal develop an algorithm that based on geolocation, time of the day, and listening history of a user compiles playlists targeting personalized mood regulation.
- Spotetal incorporate this algorithm into their streaming service, providing playlists for work-out, sexual intercourse, dance party, and healthy breakfast.
- Playlists for successful warfare, sophisticated torture, smooth suicide, and eating 10 bags of potato chips are missing.
- Is it ethical to purposefully put someone in a certain, altered physical state through music provision?
- Do the provided moods themselves incorporate a bias towards e.g. a cosmopolitan hipster lifestyles?

- To be extended by the MIR community, listeners, artists,...

- It is impossible to foresee all such situations,
- but the rejection of all responsibility is unethical.

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# Some ethical problems in MIR

- Ethical implications of a work of art being reshaped by (MIR) technology have not been discussed.
- Unintentional power and bias:
  - MIR research is remote to users in the value chain: feedback from users on how algorithms are used in final applications hard to obtain.
  - Various forms of bias: WEIRD community, Eurogenetic music, application in "Western" society.
- Cultural relativity of copyright: Automatic IPR management focuses on anglo-american IPR, fair use not considered.
- MIR specific practices: datasets and evaluation measures.



# Development of guidelines

- Initiative begun at the WiMIR 2019 workshop "Music for Good".
- Starting point: HEGAI core principles.
- Goal: Relate ISMIR relevant guidelines to these principles.
- Work just started, comments are needed!
- [LINK TO DOCUMENT](#)



# Development of guidelines

- Consider relevance and quality of the data with respect to the targeted problem, *e.g.*:
  - Metadata complete?
  - Mislabeling?
  - Repetitions?
  - How is the dataset connected to the success criteria of solving the desired problem?
- Formulate clear use cases and formalism (Sturm, Bardeli, Langlois, & Emiya, 2014) to illustrate planned use (nobody has ever developed a generic music transcription system).
- Make experiments reproducible.

- Make potential biases explicit.
  - Clear documentation of the data.
  - Increase diversity of data.
  - Collaborate with archives and music researchers from other disciplines.
- Need to document and question pre-dominant value judgements.
  - Apply value-sensitive design principles (Friedman, 1996).
  - Document problems in existing datasets and methods.
  - Question standard ML evaluation in the context of music (does ground truth exist?).
  - Move to user-based evaluation

- Publication practices
  - Clarify author contributions in publications.
  - Peer-reviews should be publicly accessible.
  - Errata must be appended to published work.
  - Writing style: e.g. avoidance of passive voice.
- Decrease remoteness of MIR to people and their practices (citizen science, user studies).
- Contribute to awareness of ethical problems among engineering students.

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