# Introduction to Affective Computing

*The challenge of affective computing is formidable, and not without risk, but it stands to move technology in a radically different direction: towards embracing part of the spark that makes us truly human."*

— *Affective Computing* (Picard, 1997)

**A personal story**

- Question → passion → mission → obsession
- Unemotional, too rational/logical? Emotions are complex and hence intriguing to me.

**The Big Areas:**

- Affect Detection
- Affect Generation

**The Big Debates:**

- Definition: Can emotion be measured? Is emotion an inherently subjective experience? **AND** messy emotion theories give computer scientists troubles!!
- Implication: Ethical dilemmas
- Approach: some researchers call for more social science understanding, but some (majority) treat it as "just another ML application". The minimalists are shouting, "throw in the data and AI will figure it out somehow, but I also don't know how." Should we focus solely on the technical?

**Books, Journals, Conferences:**

Affective Computing (Picard, 1997): "The Bible of Affective Computing"
The Oxford Handbook of Affective Computing (Calvo, 2015)
IEEE Transactions on Affective Computing
AAAC, AAAI, IAAI, IJACSA, ICASSP, ICMI, UAI, NIPS…

**People:**

Rosalind Picard (MIT Media Lab Director): the brave pioneer of AC
Jonathan Gratch (USC): the big boss of IEEE Trans on AC
Maja Pantic (Imperial, iBug Director)
Björn W. Schuller (Imperial, HUMAINE)
Louis-Philippe Morency (CMU, MultiComp Lab)
Bao-Liang Lu (Shanghai Jiaotong)
Bing Liu (UIUC)

**Some exciting projects:**

Affective robots providing treatment for children with Autism Spectrum Disorder:
http://de-enigma.eu

Personalized Animated Movies:
https://www.fengjiaopeng.com/personalized-animated-movies

Chatbot therapist: (had this idea too!)
https://woebot.io

What do you **definitely need** to do Affective Computing? (by order of importance)

- Mathematics
- Computer Science
- Psychology

If you want to **apply** Affective Computing, you **may also need**:

- Physiology
- Linguistics
- Physics, specifically mechanics and electronics
- Neuroscience
- Philosophy, specifically philosophy of AI and ethics
- Art & Design
- Drama

**More specific related disciplines**

- Ambient Systems
- Human Robot Interaction (Human Machine Interaction)
- Brain-Machine Interface (Brain-Computer Interaction)
- Multimodal Systems
- People like fancy names…

**The Future:**

- Wearable technology
- Clinical use
- Entertainment use

Follow-up courses:

Technical Category

1. Linear Algebra
2. Probability
3. Machine Learning Basics
4. C programming Basics
5. Algorithm Basics
6. Neural Networks Basics

Not-so-technical-but-still-mind-gobbling Category

1. **Connections**
2. Brain-machine interface
3. Logic Basics

Light-hearted Category

1. Linguistics for fun i.e. making more pun
2. Sharing an in-depth (rambling babbling) about my project progress haha!