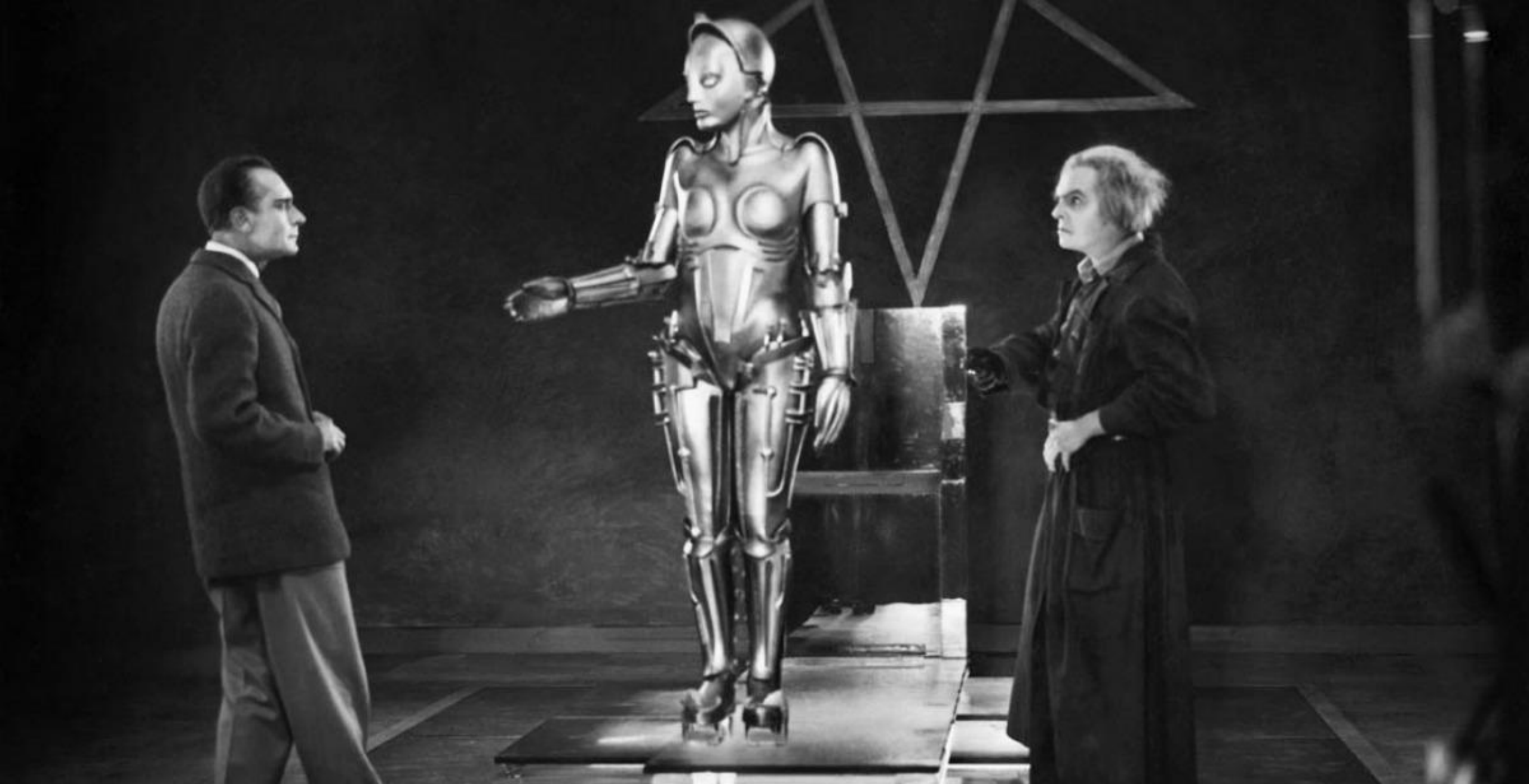


Interaction

Image Source: Screenshot from Metropolis by Fritz Lang



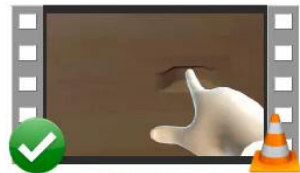
Learning Goals

- Interaction techniques
- Natural interaction

Interaction Techniques



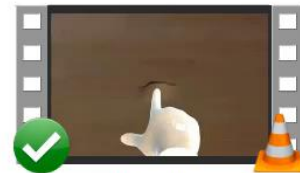
ButtonPlusMinus



ButtonRaw



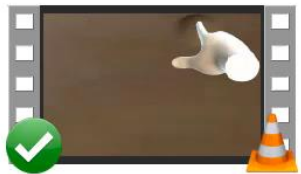
RampPlusMinus



RampRaw



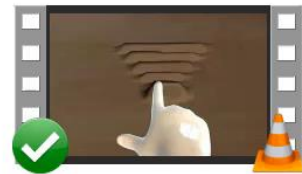
SimpleSliderPlusMinus



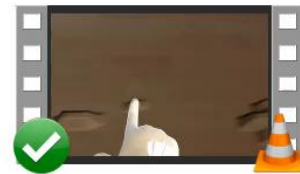
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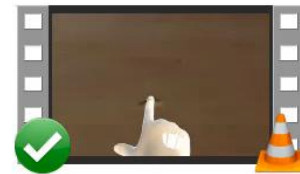
SliderPlusMinus



SliderRaw



VolumePlusMinus



VolumeRaw



x:882
y: 304



Video Source <https://vimeo.com/376900254> by Interactive Architecture Lab



Video Source <https://www.youtube.com/watch?v=RyBEUyEtXQo>
Richard A. Bolt: "Put-that-there": Voice and gesture at the graphics interface. SIGGRAPH 1980

Interaction Techniques

- are a combination of hardware and software elements that provides a way for computer users to accomplish a single task.

https://en.wikipedia.org/wiki/Interaction_technique

Interaction Techniques

Can be

- Efficient
- Elegant
- Intuitive
- Fun

Can also be

- Slow
- Clumsy
- Hard to understand
- Frustrating

Natural Interaction

- Natural User Interfaces (NUI) are easy to use that they feel natural.
- Interaction is direct and consistent with our ‘natural’ behavior.
- Bill Buxton:
 - NUIs exploit **skills** that **we have** acquired through a lifetime of living in the world
 - should always be designed with the use **context in mind**, such as voice input for automotive control but not in public environments

<https://www.interaction-design.org/literature/article/natural-user-interfaces-what-are-they-and-how-do-you-design-user-interfaces-that-feel-natural>

NUI Design Guidelines

By Joshua Blake

- Instant expertise
- Progressive learning
- Direct interaction
- Cognitive load (primarily use innate abilities and simple skills)

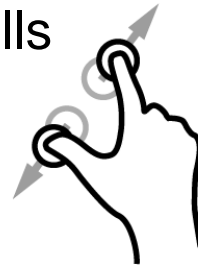
Joshua Blake, Natural User Interfaces in .Net, 2011

NUI Design Guidelines

By Joshua Blake

Instant expertise

- Take advantage of the users' existing skills
 - Reusing common human skills



- Reusing domain-specific skills

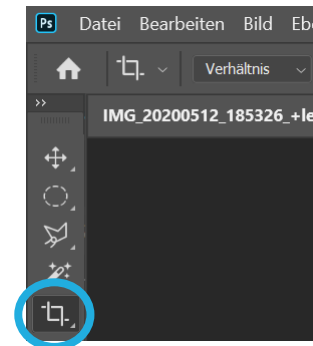
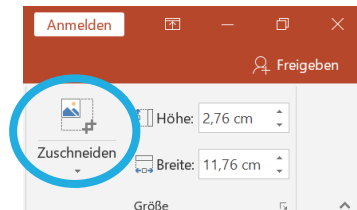
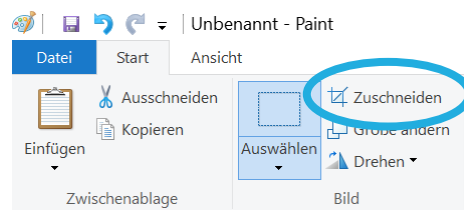


Image Source https://commons.wikimedia.org/wiki/File:Pinch_zoom.png by Rosieate

NUI Design Guidelines

By Joshua Blake

Progressive learning

- Lay out a clear learning path for users to start with basic skills and move on to something more advanced

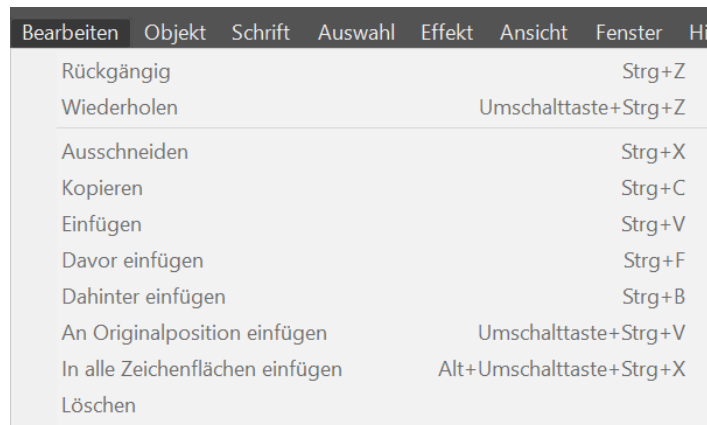


Image Source https://commons.wikimedia.org/wiki/File:Pinch_zoom.png by Rosieate

NUI Design Guidelines

By Joshua Blake

Direct interaction

- Having a **direct correlation between user action and NUI reaction** through:
 - Directness: NUI actions happen at the same time as user actions
 - High-frequency interaction: there is a *constant* flow of action and reaction between the user and the NUI
 - Contextual interaction: to not overwhelm the user, NUI should primarily show information that is relevant to the user's current interaction

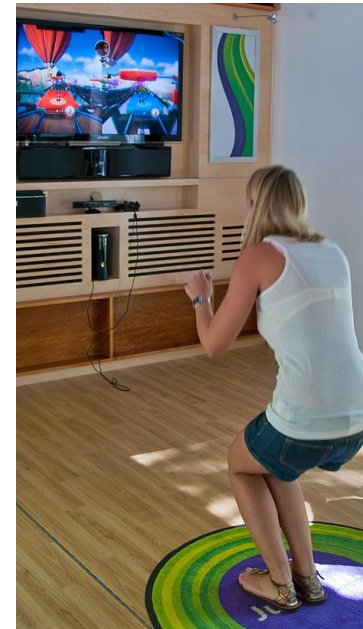


Image Source [https://commons.wikimedia.org/wiki/File:Xbox_360_Kinect_booth_at_Rudolphplatz_in_Cologne_\(4913456192\).jpg](https://commons.wikimedia.org/wiki/File:Xbox_360_Kinect_booth_at_Rudolphplatz_in_Cologne_(4913456192).jpg) by SNAAAAKE!!

NUI Design Guidelines

By Joshua Blake

Cognitive load

- Users should not think about the interface but focus on achieving a task
- User should apply basic knowledge and simple skills during the interaction

Keep it simple!

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