



**ifgi**  
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# Ori-Gami – a spatial learning game

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# Motivation

- Developmental / Cognitive
- Usability / User centered Design
  - Focussed Apps / „less is more“
- Educational
  - Educational Standards / Curricula
  - Spatial Competencies
    - Spatial Orientation
    - Map understanding



„move in real space with the aid of maps and other aids for orientation“ (German Geography Standards)



# Ori-Gami App

- „**Orientation Gaming**“
- **Game idea**
  - Teacher creates a route consisting of:
    - Startpoint, Endpoint and Waypoints
    - verbal route instructions to reach each waypoint
  - Player follows instructions step by step
- **Mobile (iOS) and stationary version (Browser)**
  - Esri ArcGIS JS and iOS APIs
- **Game-based elements:**
  - Visual feedback
  - Audio feedback





# Ori-Gami App (Editor)

OriGami Editor   Route ▾   FAQ   Über   Basemap ▾

The screenshot shows the Ori-Gami Editor interface. At the top, there is a navigation bar with the text 'OriGami Editor' and several menu items: 'Route ▾', 'FAQ', 'Über', and 'Basemap ▾'. The main area is a map showing a route in orange and blue lines. A 'Details' dialog box is open in the foreground, containing the following text:

Details  
Bitte geben Sie hier die Wegbeschreibung an:  
Please walk north until the entrance of the train station  
Bitte geben Sie hier die Hilf ein:

At the bottom of the dialog box are two buttons: 'Löschen' (Delete) and 'Speichern' (Save). The map background shows streets like 'Am Altmühlsee', 'Hauptstraße', and 'Discherstraße'. The Esri logo and 'Map data © OpenStreetMap contributors, CC-BY-SA' are visible in the bottom right corner.



# Ori-Gami App (iOS)





# Ori-Gami App (Browser)

OriGami Route - FAQ Über Basemap -

Super! Du hast den nächsten Wegpunkt gefunden.



Hinter Ihnen befindet sich das Aachener Tor. Gehen Sie bis zur 3. Kreuzung.

Map data © OpenStreetMap contributors, CC-BY-SA



# Ori-Gami App

- Not only a game
- Measurement functionalities
  - Recording of clicks / touches
    - time
    - distances
    - zoom-level
    - amount of clicks / errors
  - iOS only:
    - Tracking of user (GPS)
    - Orientation of device



# Usability Test

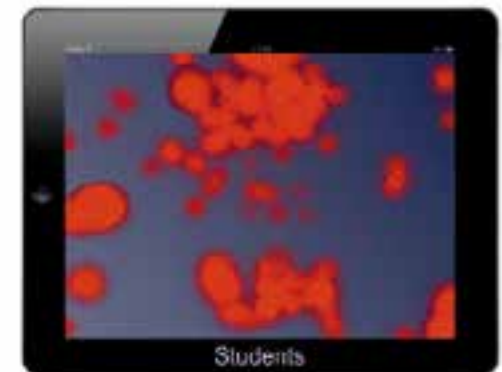
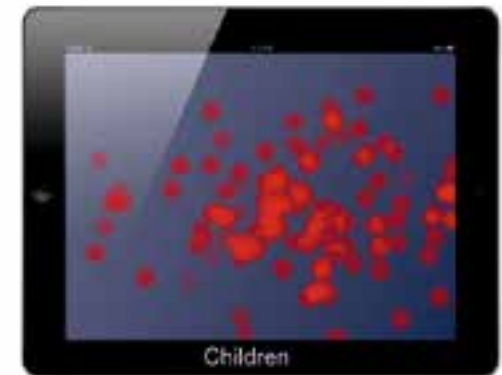
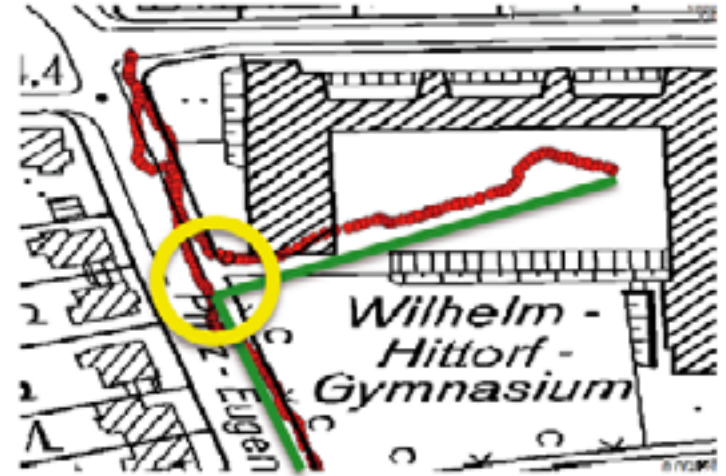
- Mobile Version (iPad)
- Two user groups
  - 12 children (10 years old)
  - 9 students of geoinformatics (av. 24.5 years old)
- Scenario: „Follow the instructions!“





# Test Results

- Heatmap of touches
  - The smiley is not being misunderstood as a button!
  - Students touched the instruction area
  - Significantly more touches for children with errors





# Test Results

- Questionnaire on user experience
  - Children had few experience with maps and tablets before
  - All participants would like to use the app for education or for leisure
  - Children liked audio feedback, students did not
  - All participants liked the visual feedback (Smiley)
  - More feedback mechanisms (hints or distance)



# Conclusions

- Ori-Gami as an educational game
  - Performed well in the usability test
  - Fits curricular and developmental „requirements“
- Ori-Gami as an measurement tool for spatial competencies
  - Recording facilities
- Ori-Gami as a game for language learning!



# Future Work

- Further development of Ori-Gami
  - More game-elements
  - Recommender system for the editor
  - Ori-Gami in AppStore
  - WebApp with GPS-use



# Thank you for your attention!

Questions?

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