# A customizable GUI through an OMDoc documents repository

Jónathan Heras Vico Pascual Julio Rubio

Departamento de Matemáticas y Computación Universidad de La Rioja Spain

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J. Heras, V. Pascual and J. Rubio

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- 2 Antecedents
- ③ From an empty GUI to a meaningful GUI
- 4 Demonstration
- 5 Conclusions and Further Work

Introduction

## The Kenzo System

• Kenzo:

• Symbolic Computation System devoted to Algebraic Topology

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  - Usability and Accessibility of the system
  - Some operations will raise errors

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- Kenzo:
  - Symbolic Computation System devoted to Algebraic Topology
- Weak points:
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  - Some operations will raise errors
- Demo



3 From an empty GUI to a meaningful GUI

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## Architecture of our system



#### Figure: Simplified diagram of the architecture

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Antecedents

## Goal

#### • Kenzo:

• Homology groups unreachable by any other means

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Antecedents

# Goal

## Kenzo:

- Homology groups unreachable by any other means
- Goal:
  - Increase the reliability of Kenzo
    - Integration of Kenzo with ACL2

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Antecedents

## Goal

#### Kenzo:

- Homology groups unreachable by any other means
- Goal:
  - Increase the reliability of Kenzo
    - Integration of Kenzo with ACL2
- Necessary:
  - Computation
  - Representation of the Mathematical Knowledge
  - Deduction

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3 From an empty GUI to a meaningful GUI

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From an empty GUI to a meaningful GUI

## A client of our framework: a GUI



Figure: Simplified diagram of the architecture

• A customizable GUI to the framework has been developed

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# Ingredients for high-level UI programming

- Ingredients:
  - Structure
  - Functionality
  - Layout

# Ingredients for high-level UI programming

## Ingredients:

- Structure: XUL
- Functionality: Common Lisp code
- Layout: Default layout (optional stylesheet)

# Ingredients for high-level UI programming

## Ingredients:

- Structure: XUL
- Functionality: Common Lisp code
- Layout: Default layout (optional stylesheet)
- OMDoc Documents repository to specify ingredients
  - Definition the mathematical structures
  - Functionality of our framework (Kenzo wrapper)
  - Graphical elements
  - • •

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# Workflow



Figure: Workflow diagram

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## Conclusions

#### Conclusions:

- A customizable GUI by means of an OMDoc documents repository
- Not only a friendly GUI but also a *mediated access* to Kenzo
- Integration of representation, computation and deduction

# Further Work

#### Conclusions:

- A customizable GUI by means of an OMDoc documents repository
- Not only a friendly GUI but also a *mediated access* to Kenzo
- Integration of representation, computation and deduction

## • Further Work:

- Implement interesting interactions between ACL2 and Kenzo
- Integration with other Symbolic Computation Systems
- Improve the architecture
- Develop a Web User Interface

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