TRIK Studio

Educational robot programming environment

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Educational robotics

- LOGO, 1967
- Lego Mindstorms, 1998, 2009, 2013
- TRIK, 2013

Existing visual programming tools for robots

- NXT-G, EV3-G
- Robolab
- Scratch
  - S4A, mBlock, Enchanting, ScratchDuino, Blockly, App Inventor
- 12Blocks
- Open Roberta
- Ardublock
- ...

TRIK Studio

- Lego Mindstorms NXT/EV3 and TRIK robotic kits
  - control-flow and data-flow languages
  - a number of textual languages
- Several program execution modes
  - 2D simulator
  - debugging on a PC + sending commands to robots over USB, Bluetooth and Wi-Fi
  - code generation and binary execution on robots
- Cross-platform (Windows, Mac OS X, Linux)
- Open-source and free to use
  - Third-party plugins, like Pioneer quadcopter or YoTik kit
- Currently supports English, Russian and French languages

Visual Language

QReal DSM platform

- Metamodeling tools
  - metaeditor, shapes editor etc.
- Generic kernel
  - common visual IDE tools
- Language plugins
  - automatically generated from language metamodels
- Tool plugins
  - code generators, interpreters, version control support, ...

Online education

- MOOC on educational robotics (in Russian)
  - https://stepik.org/s/7qe3xj4Z
- Automatic checking of solution correctness
  - based on 2D model simulation with specified constraints on robot behavior
- Web-based 2D model environment with the ability to replay robot track

Conclusion

- approx. 10K users across the globe
- Russian, English and French languages support
- Written in C++/Qt, approx. 100K LOC (+ 120K LOC of QReal core)
- Cross-platform, open-source and free to use
  - https://github.com/qreal/qreal
  - http://blog.trikset.com/p/trik-studio.html

Demo

Demonstration