Dodona: Learn to Code with a Virtual Co-teacher that Supports Active Learning

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ABSTRACT

Dodona (dodona.ugent.be) is an intelligent tutoring system [1, 2] for learning computer programming, statistics and data science. It bridges the gap between assessment and learning by providing real-time data and feedback to help students learn better, teachers teach better and educational technology become more effective.

We show how Dodona can be used as a virtual co-teacher to stimulate active learning and support challenge-based education in open and collaborative learning environments. We also highlight some of the opportunities and challenges we have faced in practice.

Dodona is free to use and has more than 50 thousand registered users across many educational and research institutions, including 15 thousand new users in the last year. Dodona’s source code is available on GitHub under the permissive MIT open-source licence.

KEYWORDS

computer programming, active learning, intelligent tutoring system, computer-assisted learning, computer-assisted teaching, classroom management, automated assessment, feedback, learning analytics

CONTENT

The poster lists some of the key features of Dodona, including clear and comprehensive feedback (Figure 1), an evaluation module and various learning analytics. For each feature, we show how it can be used in practice.

We also show how we followed best practice and extensible approaches to software development, authentication, content management, assessment, security and interoperability, and adopted a holistic view of computer-assisted learning and teaching that encompasses all aspects of managing courses that involve programming assignments.

Unlike many other automatic source code assessment platforms, Dodona has been able to grow beyond the boundaries of the course or institution for which it was originally created. Conference attendees active in computer science education can use the platform as it is free to use for schools.

REFERENCES

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