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Combining citizen science and artificial intelligence to facilitate geology outreach and capture geodiversity: prospects from the RockNet project

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Popularizing and disseminating a basic level of geological knowledge and understanding to the general public has become an important issue, either to valorize and protect our natural heritage, or to facilitate public engagement in environmental and energy debates. Emergent technologies and the increasing digitalization of our societies broaden the range of tools available to address this topic. In this talk, we focus on the prospects enabled by the combination of citizen science and Artificial Intelligence (AI), building on the birth of the RockNet™ project.

Inspired by the success of the Pl@ntNet project for botanical science outreach, RockNet™ aims at developing a mobile application, whose users can photograph rock samples and get a lithological classification from an AI algorithm. By doing so, a participative data base of rock images is progressively gathered and shared among all users. Meanwhile the most expert ones can correct the automated facies identification to gradually improve the AI capabilities. Then the resulting tool collectively produced becomes a possible support for geoscience outreach, relying on the citizens' curiosity for their immediate geological environment.

A first prototype, handling 12 different lithological classes, has already been

developed and trained on several thousand pictures. From this practical experience, we illustrate the potential of this kind of technology and the numerous challenges to consider before a large-scale diffusion of the application.