

Inspill for den “Ny digitaliseringsstrategi for universitets- og høyskolesektoren - invitasjon til åpen innspillrunde”

Trondheim, April 15, 2020

To Sigurd Eriksson, Unit, and to whom this may concern:

We are Damiano Varagnolo and Enrico Riccardi, professor and forsker at NTNU, respectively, and writing also in the name of the national and international network of collaborators with whom we work on pedagogical development issues.

With this email we entreat DIKU to prioritize the requalification of the workforce that will be jobless due to the Covid19 crisis. Hereby, we propose to focus future research calls on novel teaching and assessment workflows to support this requalification process.

Given the current situation, it is quite certain that thousands of employees will lose their jobs. Companies will have to restructure their business strategy and priority, requiring a drastic shift of employees' competences.

More precisely, unemployed individuals will:

- Be in need for re-skilling / up-skilling options while unemployed.
- Have an uncertain length of time of unemployment.
- Prefer a “continuous certification” of their learning progress that allows for adding newly acquired skills to the CV and hence increase chances of a new employment.
- Structure their learning starting from their prior knowledge, experience, personal situation, learning preferences, and speed.
- Look for positions that are suitable for the societal and industrial needs in the aftermaths of the crisis.

Companies will:

- Shorten the business plans' time horizons, given the variability of the international markets and the government policies responses.
- For the same reason, need to requalificate the already employed workforce, and/or hire new employees with new skills in a short time span.

These problems shall be faced by reducing the gap between the workforce and industry by defining a clear interface between the two realities. We thus foresee the need of novel knowledge metrics

and pedagogical approaches in the form of modular methods for describing, teaching, and assessing knowledge. More precisely, we envision:

- Courses / programs that are modular and individualizable to serve the diverse, individual needs.
- “short-term certification” capabilities that enable fast updating of the CVs.
- Programmes that can be continuously shaped on the current expertise of the students, on their goals, and on the current requirements of the job market.
- Methods and workflows to enable high profile and trustable individuals to provide structured suggestions on how to improve the curricula.

We thus urge DIKU to consider this deficiency and push for new offerings in terms of continuous education and requalification of the current workforce.

Our proposal:

We propose to use the most advanced technical methods to provide the most qualificate technical learning and teaching. Our goal is to develop artificial-intelligence based tools, methods and workflows enabling:

- The semi-automated generation of individualized study paths and education portfolios that account also for the students’ personality, study preferences, and personal goals.
- The computer-assisted selection of sets of connected learning modules to accomplish a certain specified learning goal.
- The automatic evaluation of the initial expertise of students.
- The continuous and on-the-fly assessment of the knowledge gained by remote-students, towards a continuous certification process.
- The inclusion of suggestions about students’ goals by the actors influencing the job market.

The outcome will be a double advantage for the workforce and for the industry. The workforce will be enabled to improve its qualification in a targeted and personalized manner, while the industry will be able to screen the best candidates according to their technical skills, and to influence the education process in a more structured way than now.

Our experience:

Damiano Varagnolo is a Professor at the Department of Engineering Cybernetics at NTNU in Trondheim. His research interests include statistical learning and numerical optimization with a special focus on teaching and learning analytics. He is PI for the Erasmus+ KA203 project “Fostering Awareness on program Contents in higher Education using IT tools” and other local pedagogical development initiatives.

Enrico Riccardi is currently forsker of NTNU, department of chemistry and it is the acting president of the Stipendiatororganisasjonene i Norge, which represents around 10.000 young researchers in Norway. He constructed the workgroups 'career inside academia' and 'career outside academia' that are currently working on the education evaluation of academia from a student perspective

Our pedagogical research includes teaching analytics, open data about flexible program contents, and IT tools for the management of the associated data. For this reason we would kindly offer our expertise, approach and workforce to the work panels constituted to address the current crisis.

Yours faithfully,

Damiano Varagnolo,

Enrico Riccardi

Trondheim, April 15, 2020