MATHEMATICAL SCIENCES

PNRR/NODES - Statistical methods for digital diagnosis and telemedicine

Funded By	MINISTERO DELL'UNIVERSITA' E DELLA RICERCA [P.iva/CF:97429780584] Politecnico di TORINO [P.iva/CF:00518460019]
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Context of the research activity	Disease diagnosis often involves statistical issues such as proper scoring, alignment with standard definitions, setting of population limits of biometrical measurements, rater agreement, variable selection and uncertainty quantification. It is important not to rely on arbitrary scores and thresholds, accounting instead for the natural variability of the disease and for the uncertainty inherent in all inductive procedures. More generally, telemedicine procedures should be conducted with appropriate statistical methodology. Progetto finanziato nell'ambito del PNRR PNRR M4C2, Investimento 1.5 - Avviso n. 3277 del 30/12/2021 - ECS00000036 Nord Ovest Digitale E Sostenibile (NODES) - CUP E13B22000020001
Objectives	The Ph.d. researcher will apply contemporary statistical techniques for disease scoring methods such as IRT (Item Response Theory), hierarchical modeling, risk stratification and rater agreement. It will be of paramount importance to apply the methods to actual case studies such as the diagnosis of dyslexia or other conditions which may benefit from digital devices. The project includes collaboration with companies active in the production of devices and software for digital diagnosis and, more generally, telemedicine, within the plna of activities of the PNNR Ecosystem "NODES", Spoke 5, Industry for Health and Silver Economy.
Skills and competencies for the development of the activity	Knowledge of Calculus, Probability and Statistics at a master's level. Ability to program a computer in basic languages such as C, Python or Matlab and specialized statistical software such as R or Stata. Knowledge of computational Bayesian Statistics and Probabilistic Graphical Modeling is a plus.