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HAMAD BIN KHALIFA
UNIVERSITY

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HBKU Flagship Research Grant Program 3rd Cycle– Project Highlight

Project Title: NAVIA: Neurodiversity Assessment and Voice-enabled Intervention AI

Research Team:

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Executive Summary

The NAVIA project aims to pioneer a holistic framework for advancing early screening and intervention for Autism Spectrum Disorder (ASD) by integrating multimodal AI technologies, with a strong emphasis on ethical and inclusive practices. Its core objective is to develop AI models capable of detecting early indicators of autism and generating comprehensive pre-diagnostic reports to support clinical assessments. A key component is the creation of a novel, richly annotated dataset capturing speech and behavioral cues associated with ASD. These signals will be analyzed to identify salient markers that will drive the development of accurate, culturally sensitive AI models. Building on the screening insights, NAVIA will develop an AI-powered platform to support the clinicians and caregivers in generating personalized speech and language therapy exercises, tailored to each child's unique communication profile and challenges. The project recognizes autistic speech and behavioral patterns as culturally meaningful forms of communication, and commits to designing tools that ethically respect these expressions. A core pillar of the project is the integration of ethical AI principles, ensuring that all stages—from data collection to model deployment—are guided by transparency, fairness, cultural sensitivity, and accountability, promoting inclusive design principles that respect the communicative legitimacy of autistic expressions.

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Expected Outcome

NAVIA will deliver *(i)* a multimodal Qatari ASD dataset, *(ii)* AI models to facilitate early and objective ASD screening, and *(iii)* a personalized speech and language therapy platform for clinicians, caregivers, and learners.

It will also *(iv)* advance understanding of cultural influences on behavioral and speech markers, and *(v)* establish ethical AI guidelines to promote responsible and inclusive use of technology in neurodevelopmental care.

The resources and tools developed will empower future research, inform clinical practice, and enhance early intervention strategies. The project will make academic contributions, including high-impact publications and the organization of dedicated workshops and seminars.

Flagship Area, keywords, tags: "Autism: Causes, Diagnosis, and Intervention"