INSTITUTION'S INNOVATION COUNCIL
MOE'S INNOVATION CELL

Institute Name:
Malla Reddy Institute of Technology & Science

Title of the Innovation/Prototype:
Segmentation And Classification Of Brain Tumor Using 3D-UNET Deep Neural Networks

Team Lead Name:	Team Lead Email:	Team Lead Phone:	Team Lead Gender:
Rekha	mangarekha146@gmail.com	9989481217	Female

Website (if any):
null

Startup/Venture Registered as:
Not Yet Registered as an entity

Does your Startup/Venture Recognized by DPIIT, Startup India?:
No

Name a Key Innovation which is Core to the Startup /Venture:
Segmentation And Classification Of Brain Tumor Using 3D-UNET Deep Neural Networks

Year of Started Receiving Pre-incubation/IncubationSupport for the Development of Innovation-Startup from the Institute (FY):	The Key Innovation which is Core to your Startup /Venture was Developed as:	Choose the Type of Innovation:	TRL LEVEL:
2024-25	Academic Requirement/Study Project	Product,Service	6

The Sector/Domain of Focus of the Innovation/Startup / Venture:
Healthcare & Biomedical devices.,Education,

Define the problem and its relevance to today's market / sociaty / industry need:
Startups leveraging 3D U-Net deep networks for brain tumor segmentation and classification are revolutionizing medical imaging with innovative AI-driven solutions. These models provide highly accurate and automated tumor detection, reducing the need for manual segmentation and enabling faster, more more precise diagnoses. By analy zing MRI or CT scans in three dimensions, they help in early tumor detec tion and classification, leading to personalized treatment plans. Their integration into hosp ital systems enhances efficiency and accessibility, particularly in remote areas. Additionally, continuous learning improves accuracy over time, making AI-powered diagnosis a cost-effective, scala ble, and reliable solution for modern healthcare.

Explain the uniqueness and distinctive features of the (product / process / service) solution:

How your proposed / developed (product / process / service) solution is different from similiar kind of product by the competitors if any:

Is there any IP or Patentable Component associated with the Solution?:
No

Copy of IP/Patent Applied or Obtained: View File

Did the venture/startup receive any innovation grant from the Institute?
Yes

Mention the Pre-Incubation / Incubation Unit Name: MRIT

Total Grant Amount Received (Rs.) in FY 2019-20: 0

Total Grant Amount Received (Rs.) in FY 2020-21: 0

Total Grant Amount Received (Rs.) in FY 2021-22: 0

Did the venture/startup receive any innovation grant from any external sources, so far?
No

Did the venture/startup raise any Angel/Venture Capital Investment so far?
No

Are there any recognitions/awards received by the venture/startup for the innovation in National/International Competitions?:
No

Upload the Audited copy of the financial Statement clearly indicating the FY and Annual turnover amount of Rs. 50 Lakhs or above:
No

Define the Problem – Solution fit achieved/to be achieved by the Startup: Briefly explain the relevance of the innovative solutions are being offered by the startup and what/whose problem (Industry/Society/Market) these are solving:

Startups leveraging 3D U-Net deep networks for brain tumor segmentation and classification are revolutionizing medical imaging with innovative AI-driven solutions. These models provide highly accurate and automated tumor detection, reducing the need for manual segmentation and enabling faster, more more precise diagnoses. By analy zing MRI or CT scans in three dimensions, they help in early tumor detec tion and classification, leading to personalized treatment plans. Their integration into hosp ital systems enhances efficiency and accessibility, particularly in remote areas. Additionally, continuous learning improves accuracy over time, making AI-powered diagnosis a cost-effective, scala ble, and reliable solution for modern healthcare.

Define the Product-Market fit achieved/ to be achieved by the Startup: Briefly explain the readiness levels (Technology Readiness Level and Manufacturing Readiness Level) of innovations/solutions offered by the startup to meet the customer need/requirement.

The readiness levels of innovation for brain tumor segmentation and classification using 3D U-Net deep networks progress through multiple stages. Initially, research focuses on algorithm development and validation using medical imaging datasets. As models mature, they und ergo clinical testing to assess accuracy, reliability, and real-world applicability. Regula tory approvals ensure compliance with healthcare standards, mov ing the technology toward integration into hospitals and diagnostic centers. Wider adoption depends on scalability, and cost-effectiveness, and real-world performance. With ongo ing advancements in AI and medical imaging, these solutions are transitioning from experimental research to practical deployment, aiming for widespread clinical acceptance.

Detail the potential market size and target customers/segment (Total Available Market -TAM, Serviceable Available Market - SAM, Serviceable Obtainable Market - SOM):

The potential market size for brain tumor segmentation and classification using 3D U-Net deep networks is significant, driven by the rising global burden of brain tumors and advancements in AI-powered diagnostics. The market includes hospitals, diagnostic centers, research institutions, and AI-driven healthcare startups. Key target custo mers are radiologists, neurologists, oncologists, and healthcare providers seeking accurate, automated tumor analysis. With increasing adoption of AI in medical imaging, the global AI healthcare market, valued in billions, is expected to grow rapidly. The demand for early detection, personalized treatment, and cost-effective solutions positions this technology as a game-changer in neuroscience and oncology.

Detail the Business fit achieved/ to be achieved by the Startup: Briefly explain the business model readiness level of innovations to be commercialized. Business Tractions Achieved for the innovation if any, briefly explain the customer tractions achieved for the innovations or solutions offered by the Startup as an attempt to commercialization:

A startup developing brain tumor segmentation and classification using 3D U-Net deep networks must achieve a strong business fit by aligning innovation with healthcare needs. This includes ensuring high diagnostic accuracy, and regulatory compliance, and seamless integration with existing medical imaging systems. Partnerships with hospitals, diagnostic centers, and AI healthcare firms will drive adoption. A scalable, cost-effective, and user-friendly solution enhances market penetration. Demonstrating clinical reliability and securing approvals (FDA, CE) and will build trust. A subscription-based or per-scan revenue model can ensure sustainability. Ultimately, success depends on delivering real-world impact by improving tumor detection, patient outcomes, and workflow efficiency.

Highlight any competitive advantages such as Intellectual property (IP) or any Unique Selling Proposition (USP) etc. associate with the product/service/business model/startup:
The competitive advantages of a startup using 3D U-Net deep networks for brain tumor segmentation and classification lie in its intellectual property (IP), and proprietary algorithms, and AI-driven automation. A unique deep learning model trained on diverse medical datasets ensures higher accuracy and reliability than traditional methods. Integration with cloud-based platforms enables remote diagnostics, mak ing it accessible globally. Regulatory approvals and (FDA, CE) and clinical validation build trust among healthcare providers. The unique selling proposition (USP) includes faster diagnosis, reduced radiologist workload, and personalized treatment insights. These innovations position of the startup ahead in the AI-driven medical imaging market.

Video URL:
https://docs.google.com/presentation/d/1AbSZNxPU17iFNdU53Bxef0lFRp-3kIzo/edit?usp=sharing&ouid=105279094658403936023&rtpof=true&sd=true

Innovation Photograph:
View File