Government of India
Ministry of Electronics and Information Technology
National Informatics Centre

Annexure-IV

Annual Work Report

Part A

SELF ASSESSMENT BY THE OFFICER REPORTED UPON

1. Name : Shri PARJANYA CHOPKAR

2. Designation : Scientist-B

Annual Work Report for the period 03/06/2022 to 31/12/2022

3. Area of S&T Function

Working as full-stack AI Engineer/ Scientist:
1. Preparation of Dataset which includes collection,profiling, reduction, cleaning, decomposition, scaling, labeling, augmentation etc
2. Research and implementation of appropriate ML algorithms and tools related
3. Running machine learning tests and experiments.
4. Performing statistical analysis and fine-tuning using test results
5. Optimization/Deployment/stress-testing of ML models.
6. DevOps of deployment system.
7. Web development.

4. Brief Description of S&T work function

Innovation Comparison Portal:
It is a Portal where an AI model finds duplication of text paraphrases which is developed on Natural Language Processing as an Artificial Intelligence Tool.

Mhatra API integration :
Mhatra API used Natural Language Processing as Artificial Intelligence tool which converts from one language to target language.

NMC Video Analytics.
NMC Video Analytics is a web portal designed on BootStrap, Python Flask, MongoDb and Image processing used as a tool of Artificial Intelligence.

5. S&T output indicators for assessment and measurement of work function (as appropriate to the officer)

Sl No	Product Link	Sub Category	Details
1	Knowledge Product Link	Case Studies on best practices	1. AI model development and deployment best practices 2. Web development best practices
2	Technology and Tools Product Links	Innovative use of existing tools / technology, System/sub-system components design	1. full stack development of AI system 2. full stack development of web apps
3	Technology Product Link	Process know-how	1. Understood the process of text Paraphrase comparison for Innovation comparison project 2. Understood the process of Mhatra API Integration 3. Understood the process of full web development of NMC Video Analytic DashBoard.
4	S and T Human Resource Product Link	Training on advanced technical and Analytical methodologies	1. Done training for Computer Vision on vidyakosh. 2. Done training for Artificial Intelligence on vidyakosh. 3. Done training for Block Chain Technology on Vidyakosh
5	ICT Services Product Link	Capacity Building programme	1. Done training for Computer Vision on vidyakosh. 2. Done training for Artificial Intelligence on vidyakosh. 3. Done training for Block Chain Technology on Vidyakosh
6	ICT Services Product Link	Development of Application software	1. Developed an AI model to compare text phrase for Innovation Comparison project. 2. Understood the process of Integration regarding Mhatra API. 3. Developed a Full Stack application for NMC video analytics
7	ICT Services Product Link	Design, development and hosting of portals, web applications and websites for information dissemination	1. Developed an AI model to compare text phrase for Innovation Comparison project. 2. Understood the process of Integration regarding Mhatra API. 3. Developed a Full Stack application for NMC video analytics
8	Technology Product Link	Technology status reports	1. Learned Artificial Intelligence in Depth. 2. Learned Full Stack development. 3. Learned Bootstrap as frontend language. 4. Learned Python Flask as backend 5. Learned MongoDb as backend
9	Career Product Links	Acquiring technical work experience before induction of Deity in electronics and IT industry.	Acquired around 7 years of experience working on various organization on IT Industry

NA

6. Enumeration of major outputs from S&T Function

Sl No	Product Link	Sub Category	Units
1	Knowledge Product Link	Case Studies on best practices	2
2	Technology and Tools Product Links	Innovative use of existing tools / technology, System/sub-system components design	2
3	Technology Product Link	Process know-how	3
4	S and T Human Resource Product Link	Training on advanced technical and Analytical methodologies	3
5	ICT Services Product Link	Capacity Building programme	3
6	ICT Services Product Link	Development of Application software	3
7	ICT Services Product Link	Design, development and hosting of portals, web applications and websites for information dissemination	3
8	Technology Product Link	Technology status reports	5
9	Career Product Links	Acquiring technical work experience before induction of Deity in electronics and IT industry.	1

7. Innovation content of work done (about 100 words)

1. Innovation idea comparison application developed on Natural Language Processing tool of Artificial Intelligence which compares two text paraphrases.
2. Full stack web development of NMC video analytic portal which is developed on Bootstrap, Python Flask, MongoDb and Image Processing as an analytic tool of Artificial Intelligence.

8. Major impact reported during the financial year (if any) for work done during previous three years.

NA

9. Scientific and technological methodologies used in the work function

1. Innovation Comparison Portal :
   a) Used Python as a coding language.
   b) Used Sentence Transformer and Hugging Face Model.
   c) Used libraries like pandas, sklearn, fastapi, csv for further development
   d) Read various research paper to know about paraphrase text comparison

2. For the full stack Development of NMC Video Analytic Portal:
   a) Used frontend as Boortstrap, Ajax, Javascript
   b) Used backend as Python Flask
   c) Used Db as MongoDb.

10. Suggestions (if any) for work functions based on new or emerging scientific principles

NA

11. New technologies if any introduced by the officer in work plan/functions

a) Used Python as a coding language where I used Sentence Transformer and Hugging Face Model including libraries like pandas, sklearn, fastapi, csv.
b) Used Boortstrap, Ajax, Javascript, Python Flask, MongoDb for fullstack development.

12. Any other highlight of special S&T content in the work

NA

13. One page summary of the scientific and technical elements in the work done during the financial year

1) Project Ministry of Micro, Small and Medium Enterprises
   Requirement :
   Officers from the Ministry used to give new innovative ideas to renovate the system. But sometimes the idea given may duplicate with another existing idea which had already been given by someone
   else. So here the requirement was to avoid such duplication of ideas to reduce human intervention to compare between all existing ideas. And it is likely impossible to manually compare the whole
   summary of a new idea with a list of numerous old ideas.
   Work :
   Builded a model where it compares new upcoming ideas with existing lists of ideas. For that I used a hugging face model which is a pretrained model of finding cosine similarity between two
   paraphrases successfully.

2) Application of Artificial Intelligence on Health Project:
   Requirement :
   I was a point of contact for all AI related requirements in health projects. Where I had a task to collaborate with our existing APIs whatever our AI division had developed till now.
   Those are AI Manthan, AI Tainaatee, AI Vaani, AI Saransh, AI Satyapikanan, Panini, Shruti
   We had a plan to find gaps which we can fill by AI applications with those existing APIs on any Health Project like sickle cell, eHospital,etc.
   Work:
   Mhatra API Integration with Health related Projects : Mhatra is an API which will take input on one language and translate it to desired language. E.x., If someone is speaking on native language then it
   will convert it into a common understandable language like english/Hindi and vice versa.
   So we have integrated this API on sickle cell where the name is written in english then it will convert into native language.

3) National Medical Council Dashboard:
   Requirement:
   Portal to show the number of headcounts in different areas of Hospitals. Cameras were installed on different area of Hospital like OPD, OT, LectureHall, Main Entrance,etc. Requirement was to find
   head count on particular time at particular mentioned area to monitor the presence of people at hospital.

   Work :
   Developed a portal on Frontend as Bootstrap/Ajax/JavaScript
   Backend as Python Flask
   DB as MongoDb
   Consumed an headcount API built upon artificial intelligence which will take an image frame as input and returns an output of total headcount present at that moment on image frame.

14. Quantified S&T outputs as per the selected indicators (Annexure to Annual Work Report)

Total Score : 43