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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

Reflection Report

On

Short-Term Training Programme

"GENERATIVE AI"

11th, November, 2024 - 13th, November, 2024

Co-ordinators:

Dr. R. Anitha, HoD / CSE

Ms. R. K. Kapila Vani, AP/CSE

Ms. Shobhanjaly P Nair, AP/CSE

Ms. Uma P, AP/CSE

Students Co-ordinators

Mr. Akash S- IV/ADS Mr. Ganesh S - IV/ADS

ND15/11/24





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OBJECTIVE OF THE PROGRAMME

The objective of a program titled "Generative AI" is to equip participants with comprehensive skills and knowledge in understanding conceptual foundation for leveraging Generative AI in software development and related domains. This would include:

Understand Generative AI Fundamentals

• Learn the basics of generative models, their applications, and their role in AI-driven automation.

Explore RAG (Retrieval-Augmented Generation) Architecture:

- Understand how retrieval-augmented models enhance generative AI with external knowledge.
- Implement RAG for real-world applications like chatbots and document summarization.

Learn About Generative AI Language Models and Communication:

- Explore how large language models (LLMs) process, generate, and communicate human-like text.
- Apply prompt engineering and fine-tuning techniques for improved responses.

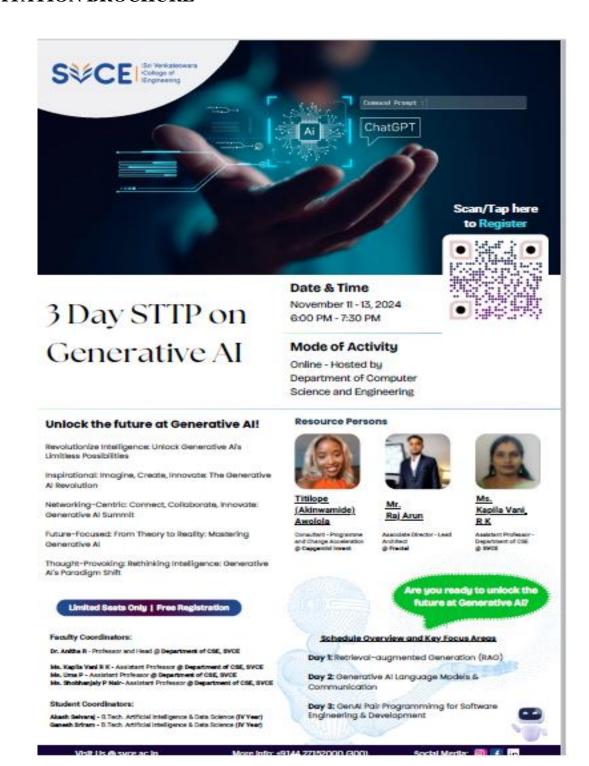
Enhance Software Development with AI-Powered Pair Programming:

- Understand how AI-assisted tools (e.g., GitHub Copilot, Tabnine) enhance software engineering.
- Implement AI-driven code suggestions, debugging, and automation in pair programming settings.

Practical Implementation and Use Cases:

- Hands-on experience with frameworks like LangChain, OpenAI API, or Hugging Face.
- Develop applications integrating generative AI capabilities.

INVITATION BROCHURE

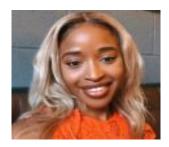


PROGRAMME SCHEDULE

- Day 1: 11.11.24 Prayer Song
 - Welcome Address by Mr Sriram Ganesh, IV Year AD / CSE
 - Introduction of Chief Guest, Ms. Shobhanjaly P Nair, AP/CSE
 - Inaugural Address by Dr R Anitha, Professor & HoD
 - Session Address by R. K.Kapila Vani, Assistant Professor, Department of CSE, SVCE.
 - Q & A Session
 - Vote of Thanks by Ms. Shobhanjaly P Nair, AP/CSE
- Day 2: 12.11.24 Welcome Address by Mr Sriram Ganesh, IV Year AD / CSE
 - Introduction of Chief Guest, Ms. Shobhanjaly P Nair, AP/CSE
 - Session Address by Ms. Titilope Awolola, Consultant Programme and Change Accelerations, Cappemini, London, UK
 - Q & A Session
 - Vote of Thanks by Dr. R. Anitha Professor & HoD/CSE
- Day 3: 13.11.24 Welcome Address by Mr Sriram Ganesh, IV Year AD / CSE
 - Introduction of Chief Guest, Ms. R. K.Kapila Vani, AP/CSE
 - Session Address by Mr. Raj Arun, Associate Director Lead Architect, @
 Fractal, Chennai
 - Q & A Session
 - Vote of Thanks by Mr Sriram Ganesh, IV Year AD / CSE.
 - National Anthem

PROFILE OF SPEAKERS

Ms. Titilope Awolola Consultant Programme and Change Accelerations, Capgemini, London, UK



Titilope Awolola is a highly skilled Program and Change Management Consultant with over seven years of experience in the consulting industry. Throughout her career, She has proven herself to be a transformative force in driving impactful organizational change across multiple industries, including Energy and Utilities, Life Sciences, the Public Sector, and Insurance. With a wealth of expertise in change management, (Titilope) mam is known for implementing strategies that ensure smooth transitions and promote the sustained adoption of new initiatives. Her ability to build and nurture productive relationships with clients or internal teams underscores her exceptional stakeholder management skills. Additionally, she is a gifted communicator, able to craft and deliver messaging that resonates with organizational goals and drives alignment. Mam's training background is extensive—she designs and facilitates workshops to empower teams with essential skills, applies agile methodologies to enhance project delivery, and mentors' teams to develop the leadership capabilities that support business growth. Above all, Mam is deeply committed to helping organizations navigate complex changes, focusing on clear communication, collaboration, and achieving sustainable outcomes.

Mr. Raj Arun Associate Director - Lead Architect @ Fractal, Chennai



Mr. Raj Arun's focus as Lead Architect revolves around crafting cutting-edge AI solutions, with Generative AI as my central expertise. He has successfully integrated advanced analytics and AI to deliver strategic business insights that foster informed decision-making. With a firm commitment to responsible

AI, he ensures that technological advancements are ethically sound and universally beneficial. He has filed 3 patents so far in cognitive analytics and autonomous intelligence. He also holds Blockchain specializations from IIT-M and IIT-G. Explored his interest in quantum computing, by completing Qiskit Developer certified by IBM program.

Raj Arun's dual role as an author in the field of Generative AI reflects his dedication to knowledgesharing and nurturing a culture of innovation. Through collaborative efforts, Sir has established best practices in AI/ML that enhance efficiency and promote continuous learning. The mission is clear: blending technological progress with real-world impact benefits both organizations and the broader society.

R.K.Kapila Vani Assistant Professor, Department of Computer Science and Engineering, Sri Venkateswara College of Engineering



Mrs R K Kapila Vani is currently working as an Assistant Professor in the Department of Computer Science and Engineering at Sri Venkateswara College of Engineering. She pursued her B.E. in Computer Science and Engineering and M.E. in Computer Science Engineering from Anna University. She secured 49th Anna University rank in M.E. She holds 3 Years of industrial experience and 10.5 years of teaching Experience. Mrs R K Kapila Vani is pursuing her PhD at Madras Institute of Technology, Anna University. Her Research Interests include E-Learning, Machine Learning, Deep Learning, Big Data Analytics, and Artificial Intelligence. She has presented 8 papers in National Conferences, 2 in International Conferences, and 8 in Scopus-indexed Conferences and book chapters. She also published more than 15 papers in UGC journals, and 1 paper in Scopus and WOS-indexed journals. She has guided more than 20+ projects. She mentored and participated as a Mentor for Team Technowizard-Smart India Hackathon -Grand Finale. She has organized 2 National conferences and several Workshops, STTP. She has published 1 patent under IPR, India, and 1 book, "Introduction to CS using Python". She also acted as a resource person in several workshops.

REGISTRATION OF THE PARTICIPANTS

S.No	Name	Name Of Institution	Contact number Personal Email ID		Note: Attendance is 'MANDATOR Y' on all 3 days of the event, in order to gain the Certificate
1.	Tuvisha B	R.M.K.COLLEGE OF ENGINEERING AND TECHNOLOGY	6369734960	tuvisha.babu06@gmail .com	Agree
2.	Sanjanaa V	R.M.K College of Engineering and Technology	9884646599	sanjanaa.vijay2@gmai l.com	Agree
3.	Vikram	PSNA College Of Engineering and Technology	9345892868	vikramkkdi03@gmail. com	Agree
4.	Rajkumar J	PSNA College Of Engineering and Technology	9791512874	rajkumarjbtech25@g mail.com	Agree
5.	Periyasamy P	R.M.K College of Engineering and Technology	8248350313	periad061@rmkcet.ac. in	Agree
6.	Merukumar A.U	R.M.K College of Engineering and Technology	9345497813	bossmeru30@gmail.co m	Agree
7.	Dr K Balachander	R.M.K College of Engineering and Technology	9381039278	kbchander12@gmail.c om	Agree
8.	Shobhanjaly P Nair	SVCE	9884130381	anjaly.cse@gmail.com	Agree
9.	Yashika K	R.M.K College of Engineering and Technology	9677267799	yashikakannan05@gm ail.com	Agree
10.	Uma P	SVCE	8903236852	uma_perumal2003@y ahoo.co.in	Agree
11.	Keerthana S	SVCE	9944736860	keerthanas@svce.ac.in	Agree
12.	Dr S RAJA LAKSHMI	SVCE	9047560110	rajiaslakshmi@gmail.c om	Agree

13.	Kanishka N	Prince Shri Venkateshwara Padmavathy Engineering College	9445619732	nkanishka366@gmail. com	Agree
14.	Gayathri D	SVCE	9445918558	dvgayu82@gmail.com	Agree
15.	Senthil Kumar R	SVCE	9629250575	senthilkumar_r@svce. ac.in	Agree
16.	N Harshvardhan	SRM	7305442914	harshvardhan14106@ gmail.com	Agree
17.	Raghavendhar R	SVCE	7019617221	rragavendhar2811200 5@gmail.com	Agree
18.	Rajyashree H	SVCE	9952047913	rrajyashree123@gmail .com	Agree
19.	Rupakesavan	SVCE	09176516422	rupakesavan@svce.ac. in	Agree
20.	S K Jananni	SVCE	7540035095	2024cs0460@svce.ac.in	Agree
21.	Balasaraswathi	Sri Venkateshwara College of Engineering	7845314225	balasaraswathi715@g mail.com	Agree
22.	Sai Ganesh P	Sri Venkateswara College of Engineering	8110947108	saiganesh4995@gmail. com	Agree
23.	Udhayarani T	P.T.Lee.CNPTC	9445451024	udhayarani.ravivalluv an@gmail.com	Agree
24.	E Kalpana	Pt Lee Chengalvaraya Naicker Polytechnic College, Chennai 7	9840060286	kalpanacnpt@gmail.co m	Agree
25.	Rethinagiri S	Sri Venkateswara College of Engineering (Svce)	6379325714	rethinagiri007@gmail. com	Agree
26.	Sathya S	P.T.Lee Chengalvaraya Naicker Polytechnic College,Vepery,Chennai	8098477867	sathyajaichandran199 4@gmail.com	Agree
27.	V Rathinavel	P T Lee Cnptc	9487241573	rathinavelv@gmail.co m	Agree

28.	Gowtham A	P.T.Lee Chengalvaraya Naicker Polytechnic College	8248162622	gowthamvijay769@gm ail.com	Agree
29.	Alagu Manikandan S	Sri Venkateswara College of Engineering	9345374657	sankarsam7260@gmai l.com	Agree
30.	Dr.G.Balamurugan	SRM Institute Of Science And Technology, Kattankulathur Campus	9629308990	gbalamurugan1991@p ec.edu	Agree
31.	Dr S J Vivekanandan	Dhanalakshmi College of Engineering	8807004828	vivekanandan.sj@dce. edu.in	Agree
32.	Yuvaraj N	Dhanalakshmi College of Engineering	9941310681	yuvarajxp@gmail.com	Agree
33.	Akhila T S	Dhanalakshmi College of Engineering	9486087693	akhilatsdce@gmail.co m	Agree
34.	Thirunavukkarasu Kannapiran	S2integrators	8826678901	thiruk.me@gmail.com	Agree
35.	Thirusha Tk	Christ University	7975516442	thirusha.tk@btech.chr istuniversity.in	Agree
36.	Dr. B.S.Kiruthika Devi	Sathyabama Institute of Science And Technology	9940245657	bskiruthikadevi@gmai l.com	Agree
37.	I R Sugumaran	Anna University	9976683226	sugumaranir@mitindi a.edu	Agree
38.	Dr. S. Sivakumar	SRM Institute of Science And Technology	9840093979	sivas.postbox@gmail.c om	Agree
39.	Hariguru TM	Anna University MIT Campus	9894627784	harigurumit@gmail.co m	Agree
40.	Reni Hena Helan R	Dhanalakshmi College of Engineering	9940580275	renihenahelen.r@dce.e du.in	Agree
41.	Jayanthi P	SRM IST Vadapalani Campus	8939851999	mail2jayanthi.p@gmai l.com	Agree
42.	Mohana Priya J	PT LEE CHENGALVARAYA NAICKER POLYTECHNIC COLLEGE	8248334674	jpriyasanthosh@gmail .com	Agree
43.	C Kayalvizhi	MIT Campus, Anna University	9944995784	dcekayal79@gmail.co m	Agree

44.	Dr. R.J.Aarthi	Bharat Institute of Higher Education And Research	9442938116	aarthisuresh98@gmail .com	Agree
45.	M.Sanjana	Sri Venkateswara College of Engineering	9600072284	msanjana1383@gmail. com	Agree
46.	P Selvamani	Sri Venkateswara College of Engineering	9789592509	pselvamani@svce.ac.in	Agree
47.	Dr.T.Senthilnathan	Sri Venkateswara College of Engineering	9840792459	senphyair@gmail.com	Agree
48.	Gaurav Kumar	Sri Venkateswara College of Engineering	8667378011	gkpride137@gmail.co m	Agree
49.	Dr.R.Uma Mageswari	VTU	9994098734	uma18.research@gmai l.com	Agree
50.	Suganya.P	J.J College of Engineering and Technology	9578703038	suganyapandiyan03@ gmail.com	Agree
51.	Dr. D. JAYANTHI	Sri Venkateswara College of Engineering	8056170188	84jayanthi@gmail.com	Agree
52.	K Govindasamy	Madras Institute of Technology	6380811898	kgswamy77@gmail.co m	Agree
53.	Shri Raam M	Sri Venkateswara College of Engineering	8667008177	shriraammurugan2004 @gmail.com	Agree
54.	Deeparani Senthil	Sri Venkateswara College of Engineering	7540070696	sdeeparanisenthil2@g mail.com	Agree
55.	Santoshi.R.V	Sri Venkateswara College of Engineering	8610706625	2022cs0326@svce.ac.in	Agree
56.	Dr. Karthika RN	Saveetha Engineering College	8248816873	karthikanarasiman@g mail.com	Agree
57.	Pranav Kumar M	Saveetha Engineering College	9384358899	pranavk2004915@gma il.com	Agree
58.	K.Suresh	Sri Venkateswara College of Engineering	9841222106	ksuresh_1987@yahoo. com	Agree
59.	Sakthieshwari D	Dhanalakshmi College of Engineering	9962117207	Sakthi220191@gmail.c om	Agree

60.	S Jayalakshmi	Sri Venkateswara College of Engineering	9941843522	jayalakshmis@svce.ac. in	Agree
61.	A.Sai Durga	Sri Vasavi Engineering College	9398505674	saisaiarjugala27@gma il.com	Agree
62.	A.Ranen Joseph Solomon	Saveetha Engineering College	6379160962	ranenjoseph@gmail.co m	Agree
63.	Mr. D. Manikandan	Vels Institute of Science, Technology And Advanced Studies	9514737969	pugalanthimanikanda n40@gmail.com	Agree
64.	Dr.R.Bhuvanya	Sri Ramachandra Faculty Of Engineering and Technology, Sri Ramachandra Institute Of Higher Education And Research	9952789386	bhuvanyaraghunathan @gmail.com	Agree
65.	Preethi D	Saveetha Engineering College	9952950125	preethidurgaprasad@ gmail.com	Agree
66.	Bhavana	Crescent University	6380634315	bhavanarajarajan@g mail.com	Agree
67.	Noor Fasla	B.S.Abdur Rahman Crescent Institute Of Science And Technology	9043242712	azyfas1612@gmail.co m	Agree
68.	Mohamed Haneefa	B.S.A Crescent Institute of Science And Technology	9150182495	mohamedhaneefa2505 @gmail.com	Agree
69.	V. Stella Mary	Anna University-Chennai	9952095909	baskaranstellamary@ gmail.com	Agree
70.	Prof. Manjunath E	Dr. T. Thimmaiah Institute of Technology	9980909510	manjunath.e@drttit.ed u.in	Agree
71.	Rukesh K	Madras Institute of Technology, Anna University	7868086163	rukesh2002@gmail.co m	Agree
72.	Mangayer Karasi GD	Sri Venkateswara College of Engineering	9361244432	gdmangai2003@gmail. com	Agree
73.	Khathijath Fariha S	B.S Abdur Rahman Crescent Institute of Science and Technology	9600694518	fariha.sathikali@gmail .com	Agree
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74. Sri Venkateswara College of Engineering Shahin Shahal Sri Venkateswara College of Engineering Shahin Shahal Shahin Shahal Institute of Science and Technology Agree Institute of Science and Technology Sri Venkateswara College of Engineering Sasa Dr.M.Sankar Sri Venkateswara College of Engineering Sasa Dr.M.Sankar Sri Venkateswara College of Engineering Sasa Shankar.auro@gmail.c om Agree Sasa Shankar.auro@gmail.c om Sankar.auro@gmail.c om Sankar.auro@gmail.com Sankar.auro@gmail.com Sankar.auro@gmail.com Sankar.auro@gmail.com Sankar.auro@gmail.com Sankar.auro@gmail.com Sankar.auro@gma							
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Engineering 99128 @gmail.com 79. Hemalatha S Sri Venkateswara College of Engineering 9361639443 hs085881@gmail.com Agree 80. M Srinidhi Sri Venkateswara College of Engineering Agree mail.com 81. Prema P Sri Venkateswara College of Engineering premigce@gmail.com Agree 82. R Gayathri Sri Venkateswara College of Engineering gayathri@svce.ac.in Agree 83. Dr.M.Sankar Sri Venkateswara College of Engineering ps08837386 shankar.auro@gmail.c om 84. S.Hemalatha Bs Abdur Rahman Crescent Institute of Science and Technology rams.anand178@gmail Agree	77.	U Mrudula		9500176655	mruduchn@gmail.com	Agree	
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Institute of Science and Technology com 85. Dr Ramya A Sri Venkateswara College of 9789340349 rams.anand178@gmail Agree	83.	Dr.M.Sankar		9500837386		Agree	
	84.	S.Hemalatha	Institute of Science and	7502886887	_	Agree	
	85.	Dr Ramya A		9789340349	· ·	Agree	
86. S.A.Carlos Joshua Sri Venkateswara College of Engineering 7418865024 2024cs0534@svce.ac.in Agree	86.	S.A.Carlos Joshua		7418865024	2024cs0534@svce.ac.in	Agree	
87. Anandi Balan Madras Institute of Technology 9941691773 anandibalan@gmail.co m Agree	87.	Anandi Balan		9941691773	_	Agree	
88. G Mathiyalagan Sri Venkateswara College of Engineering 9841909711 mathiyalagan_g@Hot mail.com	88.	G Mathiyalagan		9841909711		Agree	
89. Akshaya. M Sri Venkateswara College of Engineering 9150962397 2023ad0200@svce.ac.i Agree	89.	Akshaya. M		9150962397		Agree	

90.	Iyswarya R	Sri Venkateswara College of Engineering	9629486392	iyswarya@svce.ac.in	Agree
91.	Dr P Janarthanan	SVCE	9443087791	janap@svce.ac.in	Agree
92.	Ramesh Kumar M	SRM Institute of Science And Technology	9444344840	mramesh4mails@gmai l.com	Agree
93.	Ms.G.Abirami	AMET University	9487439171	gabirami08@gmail.co m	Agree
94.	D. Nagaraj	Dhanalakshmi College of Engineering	9840628518	deva.naga.04@gmail.c om	Agree
95.	Anju L	Sri Venkateswara College of Engineering	9840159602	anju@svce.ac.in	Agree
96.	Jayanthirani P	P T.Lee Chengalvaraya Naicker Polytechnic College, Chennai	89033 82962	Jayanthi.pugalendi@g mail.com	Agree
97.	Dr S.Sutha	Dhanalakshmi Srinivasan Engineering College, Perambalur	9843577678	suthasangapillai@gma il.com	Agree
98.	V.Indirani	P.T.Lee Chengalvaraya Naicker Polytechnic College	9444061229	cnptindu2@gmail.com	Agree

REPORT - DAY WISE

Day 1: 11.11.2024

The workshop on Retrieval-Augmented Generation (RAG) began with a warm welcome address by Mr. Ganesh Sriram, the student coordinator of III/CSE(AD), followed by an introduction to the resource person, Ms. Shobhanjaly P. Nair, Assistant Professor, CSE. The session was then led by Ms. Kapila Vani, who presented an in-depth discussion on RAG.

This event brought together AI researchers, practitioners, and students to explore the latest developments in RAG techniques, their applications, and potential future advancements. The workshop highlighted how RAG combines retrieval-based methods with generative models to enhance accuracy, contextual relevance, and informativeness of AI-generated responses. Unlike traditional models that rely solely on pre-trained knowledge, RAG models leverage external knowledge bases to generate more informed and accurate outputs.

Ms. Kapila Vani began by explaining the fundamental principles of Retrieval-Augmented Generation. RAG combines two powerful paradigms: Retrieval-Based Models: These models search large databases to retrieve relevant documents. Generative Models: These models use the retrieved data to generate coherent and contextually appropriate text.

Through this hybrid approach, RAG models outperform traditional generative models by integrating external knowledge, making the generated responses more accurate and context-aware.

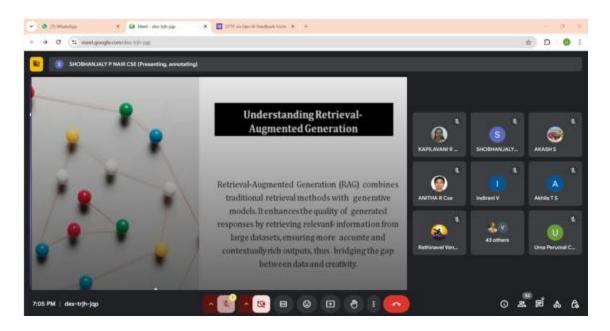
RAG Architecture:

The session also covered the technical architecture of RAG:

Retrieval Mechanism: RAG uses techniques like dense retrieval (e.g., vector space models, FAISS) to retrieve the most relevant documents.

Generative Process: These documents are then integrated into the generative process using transformer-based models such as GPT or BART.

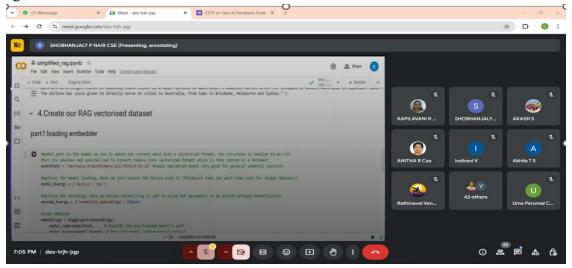
Training Approaches: Ms. Vani explained the difference between end-to-end training for RAG models (where retrieval and generation are optimized together) and traditional pre-trained models.



Applications of RAG:

Several real-world applications of RAG were discussed:

Chatbots and Virtual Assistants: RAG enhances the accuracy and informativeness of conversational agents.



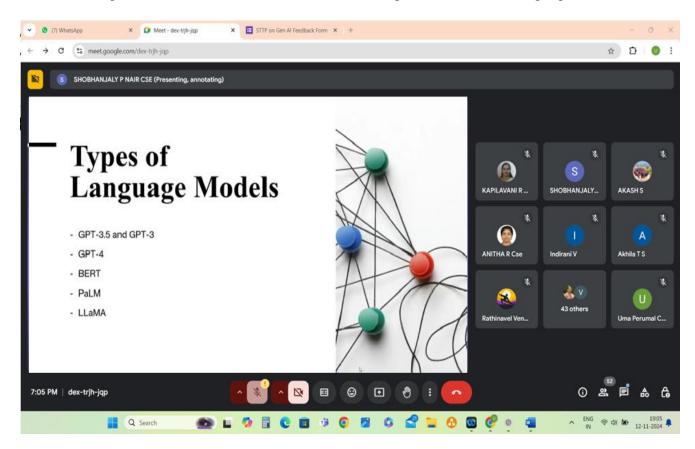
The workshop provided an enriching experience for participants, offering insights into the underlying architecture, applications, and future directions of RAG. The event fostered discussions on the challenges and opportunities of combining retrieval and generation models, equipping attendees with the tools and techniques to implement RAG systems effectively.

The session concluded with a Q&A session, followed by a thoughtful vote of thanks delivered by Ms. Shobanjaly Nair, Assistant Professor, CSE, expressing gratitude to all speakers and participants.

Day 2: 12.11.2024

The event started with the welcome address by the IV/CSE(AD) student coordinator, **Mr. Ganesh Sriram,** followed by the introduction to Resource Person by Ms. Shobhanjaly P Nair, Assistant Professor/CSE.

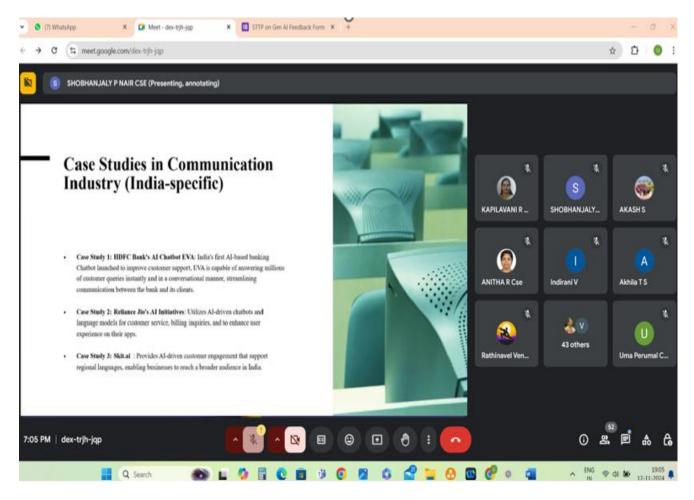
Then the session was continued by the Resource Person Ms. Titilope Awolola. The topic was "GEN AI LANGUAGE MODELS AND COMMUNICATION". Mam started with an introduction to Language Models, she further explained language models as AI systems designed to understand and generate human-like text which can be used for various applications from chatbots to content generation and also Language models leverage vast amounts of data and machine learning to mimic human language.



Titilope Awolola's lecture provided a comprehensive overview of language models, tracing their evolution from early Markov chains to modern models like GPT and GPT-4. These models are trained on large datasets and can be fine-tuned for various tasks, with approaches like zero-shot and few-shot learning. She highlighted their unique strengths, she discussed popular models such as GPT-3, GPT-4, BERT, PaLM, and LLaMA.

The applications of these models were explored in fields like chatbots, content creation, and language translation. Language models enhance customer support, streamline internal communications, and assist in PR and marketing in the communication industry. Titilope also shared case studies from India, such as

HDFC Bank's AI chatbot EVA and Reliance Jio's AI initiatives. Challenges like bias, security, and ethical concerns were emphasized, as well as the future trends of IoT integration and industry-specific models. Overall, the lecture highlighted the transformative power of language models across industries and the ethical considerations involved in their use.



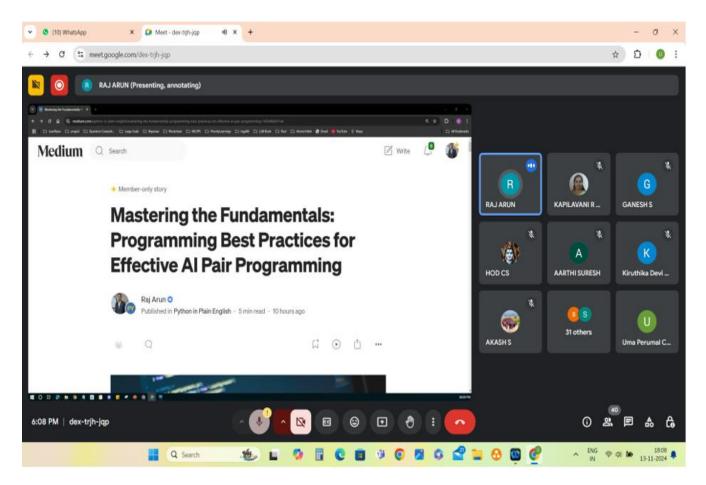
The session concluded with clarifying doubts and an engaging discussion, followed by a vote of thanks delivered by Dr. R. Anitha, Head of the Department of Computer Science and Engineering.

Day 3: 13.11.2024

The event started with the welcome address by the IV/CSE(AD) student coordinator, Mr. Ganesh Sriram, followed by the introduction to Resource Person by Ms. R. K. Kapilavani, Assistant Professor/CSE.

The session on "Generative AI Pair Programming for Software Engineering and Development," led by Mr. Raj Arun, was both insightful and thought-provoking. Mr. Arun introduced the concept of using generative AI as a collaborative partner in programming, emphasizing its potential to revolutionize software engineering practices. He highlighted how tools powered by AI can assist in tasks ranging from code generation and debugging to refactoring and documentation, thereby increasing efficiency and

reducing human error. His expertise provided a practical perspective on how AI could serve as an invaluable resource, complementing the skills of human developers rather than replacing them.



One of the key takeaways was the adaptability of generative AI in diverse development workflows. Mr. Arun shared real-world examples where AI was integrated seamlessly into agile environments, speeding up sprints and enabling quicker iterations. He also discussed the ethical considerations and limitations of AI tools, emphasizing the importance of developer oversight to ensure quality and accountability. His insights on balancing automation with creativity were particularly impactful, as they underscored the need for developers to remain deeply involved in decision-making while leveraging AI as a supportive tool.

Overall, the session shed light on the evolving relationship between humans and AI in software development. Mr. Raj Arun's engaging delivery and deep understanding of the subject matter left the audience inspired to explore generative AI tools in their own projects. The discussion reinforced the idea that while AI can enhance productivity and innovation, the essence of software engineering lies in human ingenuity, critical thinking, and collaborative problem-solving. This reflection has sparked curiosity about future possibilities, where generative AI could redefine traditional coding practices.

SAMPLE RESOURCE PERSON LETTER OF APPRECIATION



Autonomous Institution, Affiliated to Anna University, Chennai. Approved by the A.I.C.T.E, Accredited by NAAC Post Bag No.1, Pennalur, Sriperumbudur Tk. 602117 India.

Phone : 91-44-27152000(20 lines)

Fax : 91-44-2715 2111

Email : acm@svce.ac.in URL: https://www.svce.ac.in





14/11/2024

Letter of Appreciation

On behalf of the organizing committee and all the workshop participants, we would like to extend our sincere gratitude to Mr. Raj Arun, Associate Director, Lead Architect @ Fractal, for your excellent presentation and valuable insights during the Three-Day Short Term Training Programme on "GENERATIVE AI" on November 13, 2024.

Your extensive knowledge and expertise in the field of Generative AI have been valuable, and we are grateful for the time and effort you put into preparing and delivering your presentation on the topic "Mastering the Fundamentals: Programming Best Practices for Effective AI Pair Programming". Your presentation was well received by all the attendees, and we received many positive comments and feedback.

Your contribution has been instrumental in making this Short Term Training Programme a success, and we hope that you found the experience equally rewarding. Your dedication to your work and willingness to share your knowledge with others is truly appreciated.

Once again, we thank you for your outstanding contribution to the STTP and look forward to possibly working with you again in the future.

Thank you.

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Prof. & HOD/CSE

HEAD OF THE DEPARTMENT
COMPUTER SCIENCE AND ENGINEERING
SRI VENKATESWARA COLLEGE OF ENGINEERING
PENNALUR, SRIPERUMBUDUR TALUK - 602 117
TAMIL NADU, INDIA

SAMPLE PARTICIPATION CERTIFICATE





FEEDBACK FROM PARTICIPANTS

Day 1: 11.11.24

Timestamp	Name	Designat ion	College	Department	Rating	Feedback	Suggestions, if any
11/11/2024 19:07:48	Akhila T S	Faculty	Dhanalakshmi college of engineering	Electronics and Communication Engineering	10	Excellent	No
11/11/2024 19:07:52	Dr.D.Menaka	Faculty	Sri Venkateswara College of Engineering	Electronics and Communication Engineering	9	Good Session	Nil
11/11/2024 19:07:59	I R Sugumaran	Student	Anna University	Mechanical Engineering	7	Good	
11/11/2024 19:08:05	Dr.G.Balamurugan	Faculty	SRM Institute of Science and Technology, Kattankulathu r Campus	Computer Science and Engineering	10	Good	Good
11/11/2024 19:08:11	Akshaya. M	Student	Sri venkateswara college of engineering	Artificial Intelligence and Data Science	10	Great explanatio n!!	
11/11/2024 19:08:27	Anandi Balan	Student	Madras Institute of Technology	Information Technology	10	Good	
11/11/2024 19:08:32	PREETHI D	Student	SAVEETHA ENGINEERI NG COLLEGE	Computer Science and Engineering	9	Clear deliveranc e of content , Good presentatio n	
11/11/2024 19:08:43	Dr.M.Sankar	Faculty	Sri Venkateswara College of Engineering	Electrical and Electronics Engineering	10	Informativ e session	Nil
11/11/2024 19:08:52	SUGANYA.P	Faculty	J.J COLLEGE OF ENGINEERI NG AND TECHNOLO GY	Computer Science and Engineering	8	The session was useful and understan dable	

11/11/2024 19:08:54	E Kalpana	Faculty	PT Lee Chengalvaray a Naicker Polytechnic college, Vepery, Chennai 7	Electronics and Communication Engineering	10	Excellent.	
11/11/2024 19:09:12	gaurav kumar	Student	sri venkateshwar a college for engineering	Computer Science and Engineering	9	the session was intersting . this session made me to search even further more topics on ai	
11/11/2024 19:09:12	Baskaran S	Student	Sri Venkateswara College of Engineering	Artificial Intelligence and Data Science	8	Deepful	
11/11/2024 19:09:25	RETHINAGIRI S	Student	Sri Venkateswara College of Engineering (SVCE)	Computer Science and Engineering	7	Good	Use Animations if you can
11/11/2024 19:09:46	NOOR FASLA	Faculty	B.S.Abdur Rahman Crescent Institute of Science and Technology	Computer Science and Engineering	10	The sesssion wents out very good and knowledga ble.	
11/11/2024 19:09:49	RUPAKESAVAN	Faculty	Sri Venkateswara College of Engineering - Sriperumbudu r-India	Computer Science and Engineering	8	Thank you organizers	Informative
11/11/2024 19:10:03	Dr S J Vivekanandan	Faculty	Dhanalakshmi College of Engineering	Computer Science and Engineering	9	Good	
11/11/2024 19:10:07	Alagu Manikandan S	Student	Sri Venkateswara College of Engineering	Artificial Intelligence and Data Science	10	Thanks to arrange this kind of sessions its usefull for us to learn cutting edge skills.	

11/11/2024 19:10:15	Raghavendhar R	Student	Sri Venkateswara College of Engineering	Artificial Intelligence and Data Science	9	Good and informativ e session	
11/11/2024 19:10:18	Anitha R	Faculty	SVCE	Computer Science and Engineering	10	Excellent	
11/11/2024 19:10:32	U.Mrudula	Student	Sri Venkateswara College Of Engineering	BioTechnology	9	It was an informativ e session.	
11/11/2024 19:10:37	N.HARSHVARDHA N	Student	SRM UNIVERSITY	Computer Science and Engineering	9	DETAILE D EXPLAN ATION OF THE CONCEP TS IS CRISP AND CLEAR	NEED MORE FOCUS ON PRACTICAL IMPLEMENT ATION OF IT
11/11/2024 19:10:50	Dr.R.J.Aarthi	Faculty	Bharath Institue of Science and Technology, BIHER	Computer Science and Engineering	7	More language learning models - to be discussed	

Day 2:12.11.24

Timesta mp	Name	Designat ion	College	Department	Mention departm ent, if not mention ed above	Rat ing	Feedback	Suggestio ns, if any
11/12/20 24 19:06:07	Anju L	Faculty	Sri Venkateswar a College of Engineering	Electronics and Communic ation Engineerin		8	Nice overview of GenAI	
11/12/20 24 19:06:08	Dr.D.Me naka	Faculty	Sri Venkateswar a College of Engineering	Electronics and Communic ation Engineerin g		10	Session was very informative	
11/12/20 24 19:06:08	PREET HI D	Student	SAVEETHA ENGINEER ING COLLEGE	Computer Science and Engineerin		9	Clear deliverance of content, Good presentation	
11/12/20 24 19:06:21	Dr S J Vivekan andan	Faculty	Dhanalaksh mi College of Engineering	Computer Science and Engineerin g		10	Superb	No
11/12/20 24 19:06:22	A.Ranen Joseph Solomon	Student	Saveetha Engineering College	Computer Science and Engineerin		8	yeah the session was good and well structured	
11/12/20 24 19:06:23	Dr. B.S.Kiru thika Devi	Faculty	Sathyabama Institute of Science and Technology	Computer Science and Engineerin	CSE	9	The session was excellent	NIL
11/12/20 24 19:06:37	RETHI NAGIRI S	Student	Sri Venkateswar a College of Engineering (SVCE)	Computer Science and Engineerin		7	Good	
11/12/20 24 19:06:40	N.HARS HVARD HAN	Student	SRM UNIVERSIT Y	Computer Science and Engineerin g	BIG DATA ANALY TICS	7	QUITE BASIC CONCEPT	
11/12/20 24 19:06:41	RUPAK ESAVA N	Faculty	Sri Venkateswar a College of Engineering	Computer Science and Engineerin g	CSE	10	Thank you organizers	Informat ive session

			Sriperumbu dur-India				
11/12/20 24 19:07:05	V.INDI RANI	Faculty	P T.Lee Chengalvara ya Naicker Polytechnic College	Electronics and Communic ation Engineerin g	9	Very useful	
11/12/20 24 19:07:10	YASHI KA K	Student	R.M.K. College of Engineering and Technology	Artificial Intelligence and Data Science	9	Good	
11/12/20 24 19:07:24	Raghave ndhar R	Student	Sri Venkateswar a College Of Engineering	Artificial Intelligence and Data Science	10	Good session	
11/12/20 24 19:07:29	Akhila T S	Faculty	Dhanalaksh mi college of engineering	Electronics and Communic ation Engineerin g	10	Excellent-	
11/12/20 24 19:07:39	Balasara swathi.s	Student	Sri venkateswar a college of engineering	Artificial Intelligence and Data Science	8	It was great knowing about the generative ai i was fascinated how the world is marching towards ai and people getting adapted to the environment	Nothing
11/12/20 24 19:07:32	Alagu Manika ndan S	Student	Sri Venkateswar a College of Engineering	Artificial Intelligence and Data Science	10	A wonderful session about GenAI and its various Applications. I specially thanks to Ms.Titilope and the coordinators to organize the event.	

Day 3: 13.11.24

Timesta mp	Name	Designat ion	College	Departme nt	Mention department, if not mentioned above	Rating	Feedbac k	Suggestio ns, if any
11/13/20 24 18:15:38	Test	Student	SVCE	Artificial Intelligen ce and Data Science		10	Nothing	
11/13/20 24 18:16:39	Test	Student	Sri Venkatesw ara College of engineerin g	Artificial Intelligen ce and Data Science		10	Good	None
11/13/20 24 19:39:32	R GAYAT HRI	Faculty	SVCR	Computer Science and Engineeri ng		10	Informa tive session	
11/13/20 24 19:39:32	RETHI NAGIRI S	Student	Sri Venkatesw ara College of Engineerin g (SVCE)	Computer Science and Engineeri ng		7	Good	
11/13/20 24 19:39:34	S.A.Carl os joshua	Student	svce	Computer Science and Engineeri ng		9	it was helpful	
11/13/20 24 19:39:44	E Kalpana		PT Lee Chengalva raya Naicker Polytechnic college, Vepery, Chennai 7	Electronic s and Communi cation Engineeri ng		10	Very good presenta tion	
11/13/20 24 19:39:46	Reni Hena Helan R	Faculty	Dhanalaks hmi College of Engineerin	Computer Science and Engineeri ng		9	Informa tive session	No specific suggestio ns
11/13/20 24 19:39:49	Anitha R	Faculty	Sri Venkatesw ara College of Engineerin g	Computer Science and Engineeri ng		10	Excellen t	

11/13/20 24 19:40:00	Jayanthi P	Faculty	SRM IST Vadapalani Campus, Chennai	Computer Science and Engineeri ng	8	good	
11/13/20 24 19:40:03	Dr.R.J. Aarthi	Faculty	Bharathi Institute of Science and Technology , BIHER	Computer Science and Engineeri ng	9	Very Informa tive with live demo	
11/13/20 24 19:40:08	Dr S J Vivekan andan	Faculty	Dhanalaks hmi College of Engineerin g	Computer Science and Engineeri ng	9	Good	Good
11/13/20 24 19:40:14	RUPAK ESAVA N	Faculty	Sri Venkatesw ara College of Engineerin g - Sriperumb udur-India	Computer Science and Engineeri ng	10	Excellen t coordina tion	Informat ive
11/13/20 24 19:40:54	Dr.R.U ma Magesw ari	Faculty	VTU	Computer Science and Engineeri ng	10	Excellen t Session	
11/13/20 24 19:41:51	V.INDI RANI	Faculty	P.T.Lee Chengalva raya Naicker Polytechnic College	Electronic s and Communi cation Engineeri ng	9	Useful	
11/13/20 24 19:41:57	YASHI KA K	Student	R.M.K. College Of Engineerin g and Technology	Artificial Intelligen ce and Data Science	10	Good!!	NIL
11/13/20 24 19:42:07	M.M.N OOR FASLA	Faculty	B.S.ABDU R RAHMAN CRESCEN T INSTITUT E OF SCIENCE AND TECHNO LOGY	Computer Science and Engineeri ng	10	The Session was too good.	

OUTCOME OF THE PROGRAMME

Participants of the program gained proficiency in Generative AI Fundamentals as they understood how generative models work, their architectures, and real-world applications. They have got an insight on Master RAG (Retrieval-Augmented Generation) Architecture and how to integrate retrieval-based techniques to enhance generative AI responses with external knowledge sources. Also, participants appreciated how large language models (LLMs) generate, process, and optimize human-like communication.

At the end of the programme, participants were able to explore how AI-powered tools like GitHub Copilot, CodeWhisperer, and Tabnine enhance software development and pair programming.