



Electrozen'21

Every Moment is a New Beginning

Volume-7/A Product of ECEians...



HINDUSTHAN COLLEGE OF ENGINEERING AND TECHNOLOGY

***“BELIEVE YOU CAN AND YOU'RE
HALFWAY THERE”***

HINDUSTHAN COLLEGE OF ENGINEERING AND TECHNOLOGY is founded with a vision to impart high quality engineering education at an affordable cost under the guidance of our CHAIRMAN THIRU T.S.R. KHANNAIYANN and beloved SECRETARY THIRUMTATHI SARASWATHI KANNAIYANN in the year 2000.

Our institution is an AUTONOMOUS body and all the courses are approved by ALL INDIA COUNCIL FOR TECHNICAL EDUCATION [AICTE] and NAAC.

True to it's legacy, HICET has embarked on a mission to empower students and prepare their young minds for lifelong learning by creating and disseminating appropriate knowledge. Our management has taken utmost care in providing state of the art infrastructure such as well-equipped labs, spacious class rooms, hi-tech teaching aids, auditorium, well stocked library, hygienic canteen and a safe and secure hostel for out-station students.

ELECTRONICS AND COMMUNICATION ENGINEERING

VISION OF THE DEPARTMENT

To nurture Electronics and Communication Professionals with exemplary technical skills adorned with ethical values.

MISSION OF THE DEPARTMENT

- » To expand frontiers of knowledge through the provision of inspiring learning environment.
- » To develop the intellectual skills towards employability by fostering innovation, and creativity in learning.
- » To provide a quality system for wholesome learning to achieve progress and prosperity in life along with moral values

PROGRAM EDUCATIONAL OBJECTIVES [PEO]

Preparing graduates to,

PEO 1: To prepare the graduates to solve, analyze and develop real time engineering products by providing strong foundation in the fundamentals of Electronics and Communication Engineering.

PEO 2: To prepare the graduates to succeed in multidisciplinary dimensions by providing adequate trainings and exposure to emerging technologies.

PEO 3: To prepare the graduates to become a successful leader and innovator following ethics with the sense of social responsibility for providing engineering solutions.

PROGRAM SPECIFIC OUTCOMES [PSO]

1. Graduates will be able to provide solutions for real time embedded systems using Internet of Things to meet the global needs.
2. Graduates will have the perseverance to design and develop products using cutting edge technologies in Signal processing and Communication systems.

CEO's Desk



I'm happy to present to you, ECE Department's VIIth volume of departmental annual magazine 2022.

College magazines have a great educative value. They encourage students to think and write. In fact, young talent find it's very first exposure through this medium. It also encourages the upcoming batches to pull off more. The magazine also records the achievements and various activities of the institution. I hope this publication would be successful in achieving this objective.

Congratulations to the editorial team who have been instrumental in bringing out this commendable piece of work

Dr. K. Karunakaran
CEO

Principal's Desk



I am very pleased to note that magazine (ELECTROZEN'21) volume VII, brought out is applauded. Extending ovation to the editorial team. The magazine (ELECTROZEN'21) from the department of Electronics and Communication Engineering invites a wider readership in the institute. The stature and staid of an institute are conferred by convergent of students and teachers. This magazine has lives up to showcase the strength of an institute with glorious exhibition of potential of faculty and students with their literary skills and innovative ideas.

I hail up for the success of this endeavor

**Dr. J. JAYA
PRINCIPAL**

Head of the Department's Desk



“Education is one thing no one can take away from you”

Department of Electronics and Communication commits to work with a blend of competent, technical, social and managerial skills. Department places emphasis on all important aspects of mental, social, internal development and sound efficiency. All these tales of evolving the budding minds and igniting technical intelligence with directing them aptly towards their domain of utmost interest, they get in our department and in the institute are embedded on the pages of the college magazine.

I extend my congratulatory regards to the team of students and faculties. I hope this successful tradition of timely launch of magazines will be carried forward by the following generation of students to come.

**Dr. P. VIJAYALAKSHMI
HEAD OF THE DEPARTMENT, ECE**

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Afrodis



5G Network

The fifth generation of mobile networks is known as 5G. After the 1G, 2G, 3G, and 4G networks, this is a new standard. The goal of 5G wireless technology was to provide ultra-low latency, vast network capacity, high data transfer speeds (several Gbps), and increased reliability. The 5G network has a faster performance rate and is made to digitally connect everyone and everything, including machines, objects, and devices. Although no one firm or individual actually owns 5G, many mobile ecosystem players are crucial in making 5G a reality. The Third Generation Partnership Project (3GPP), a business group, establishes the international standards for the 3G Universal Mobile Telecommunication System (UMTS), which includes HSPA, 4G LTE, and 5G technologies. The 3GPP, a consortium of partners from seven various international standard organizations, established the 5G standards. Using a technique called 5G, which is based on OFDM (Orthogonal Frequency Division Multiplexing), a digital signal is modulated and spread across a number of channels to lessen interference.

5G OFDM runs using the same mobile networking technologies as 4G LTE. The fifth generation utilizes both the 5G NR (New Radio) air interface and OFDM concepts. Wider bandwidth technologies like mmWave and sub-6 GHz are also used by 5G. In addition to providing data quicker and better than 4G LTE, 5G is intended to open up new service opportunities in areas like mission-critical communications, enhanced mobile broadband, and connecting the enormous IoT.



Gowthaman R

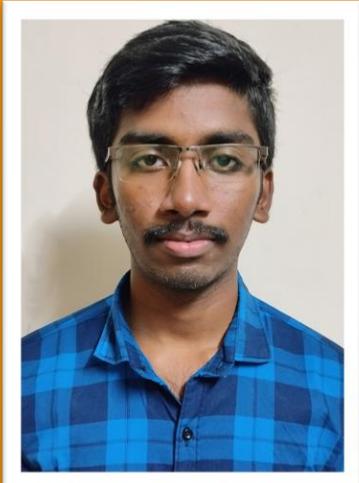
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III ECE A

Electric Vehicles

An automobile that uses one or more electric motors for propulsion is known as an electric vehicle (EV). A battery, collector system, or electricity from extravehicular sources can all be used to power electric cars. Road and rail vehicles, surface and underwater watercraft, electric airplanes, and electric spacecraft are just a few examples of electric vehicles. Electric vehicles initially appeared in the middle of the 19th century. Due to technology advancements, a greater emphasis on renewable resources, and efforts to lessen the impact of transportation on climate change, pollution, global warming, and other environmental challenges, electric vehicles are experiencing a comeback in the twenty-first century. Electric vehicles (EVs) differ from conventional cars in that the electricity they use can be produced using a variety of fuels, including nuclear power, renewable energy sources like solar and wind power, or any combination of those. Electric vehicles often employ lithium-ion batteries because they offer greater energy and power densities and a longer lifespan than other types of batteries. For optimal performance, Li-ion batteries must be used within a safe temperature and voltage range. Similar to conventional machinery, the power of the motors in electric vehicles is measured in kilowatts (kW).

Over a large RPM range, these motors may produce their maximum torque. Depending on the type of charger, charging efficiency varies greatly, and energy is lost during the conversion of electrical energy to mechanical energy. A DC/AC inverter is typically used to convert direct current (DC) electricity into alternating current (AC), which is then linked to a three phase AC motor.



Kota Harish Sri Raghavendra

19106059

III ECE B

Quantum Electron Devices

When semiconductor devices become small enough, inescapable quantum effects open a whole new range of possibilities for electronic manipulation.

Much of our understanding of electron transport in solids is based on the semiclassical picture that views electrons as particles obeying Newtonian mechanics in an external field and occasionally scattered by phonons and impurities.

Quantum effects such as size quantization and tunneling, however, cannot be understood within this conceptual framework. An accurate understanding of quantum effects in electronic devices is essential for extending down-scaling of conventional electronic devices closer to the quantum scale, and for the possible development of a quantum device technology, with its potential for much greater functionality per unit cost, size, and power. To build this understanding, a numerical quantum device simulator called SQUADS (Stanford Quantum Device Simulator) was developed. This dissertation describes the implementation of SQUADS and some significant investigations conducted with this simulation tool. The design of SQUADS was directed by two goals: the study of quantum device operation, and the study of quantum device simulation. Two independent formulations of quantum mechanics provide the theoretical foundation of SQUADS.

The transfer-matrix method provides a source of quick initial simulation results, and is especially useful for examining the energy spectrum of carriers. In general, this work found that quantum device simulation is still in a formative stage, although significant advances have been made in this work and elsewhere.



Rifhath Rizan

19106096

III ECE C

Edge Computing

Edge computing is a distributed information technology (IT) architecture in which client data is processed as near to the original source as is practical at the network's edge. The traditional computer paradigm, which is based on centralized data centre's and the public internet, is not well suited to moving rivers of real-world data that are constantly expanding. Such attempts may be hampered by bandwidth restrictions, latency problems, and unforeseen network outages. Edge computing relocates a portion of the storage and computing capacity away from the main data centre and closer to the actual data source. Processing and analysis of raw data are done locally rather than being sent to a central data centre where the data is stored. The ideas of cloud computing and fog computing are strongly related to edge computing. Edge computing is the placement of computer and storage resources at the site where data is produced despite there being some overlap between these notions. In an ideal scenario, this places compute and storage close to the data source at the network edge. Large- scale, highly scalable deployment of computer and storage resources to one or more geographically dispersed locations is known as cloud computing (regions).

The cloud is a favored centralized platform for IoT deployments since cloud providers offer include a variety of pre packaged services for IoT operations. Where bandwidth is constrained or connectivity is erratic due to site environmental factors, edge computing can be helpful. Even a large -scale edge computing deployment uses a restricted number of resources and services to accomplish a predetermined task at a predetermined size.



Manikandan S

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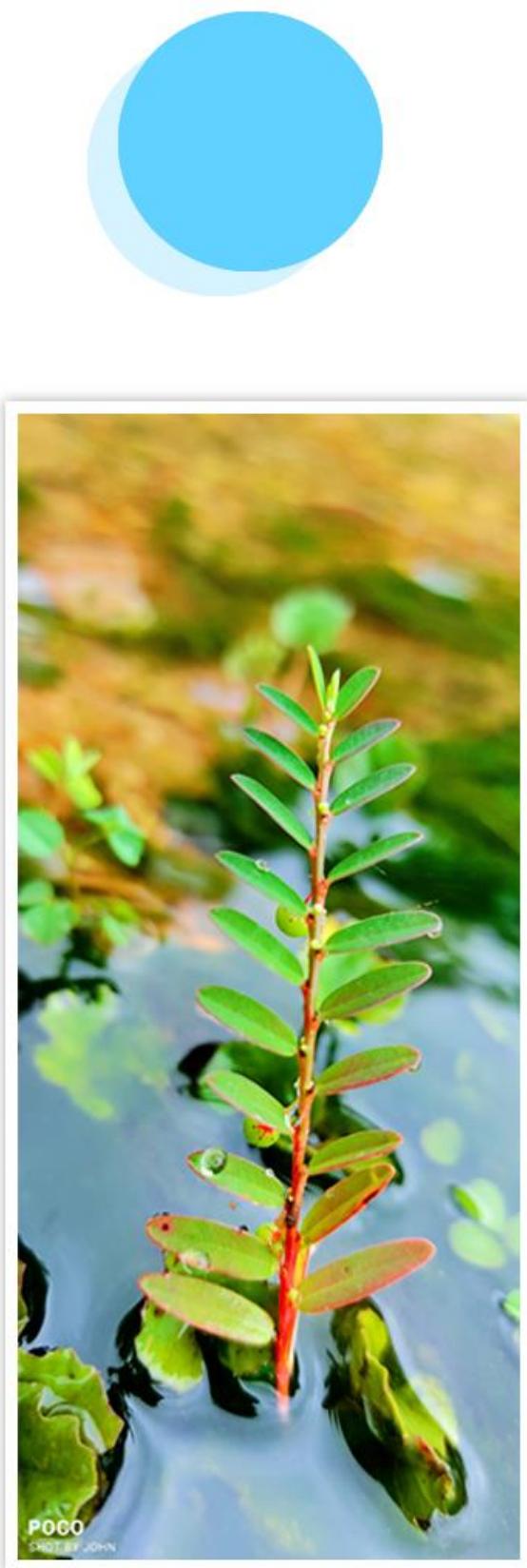
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Photography

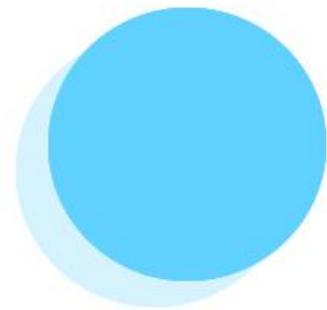




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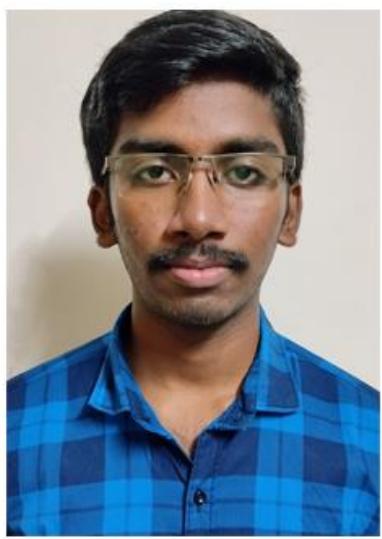


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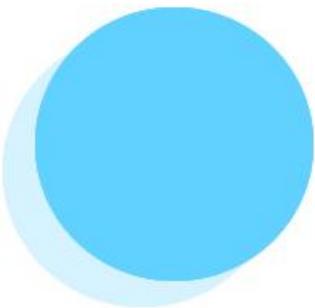


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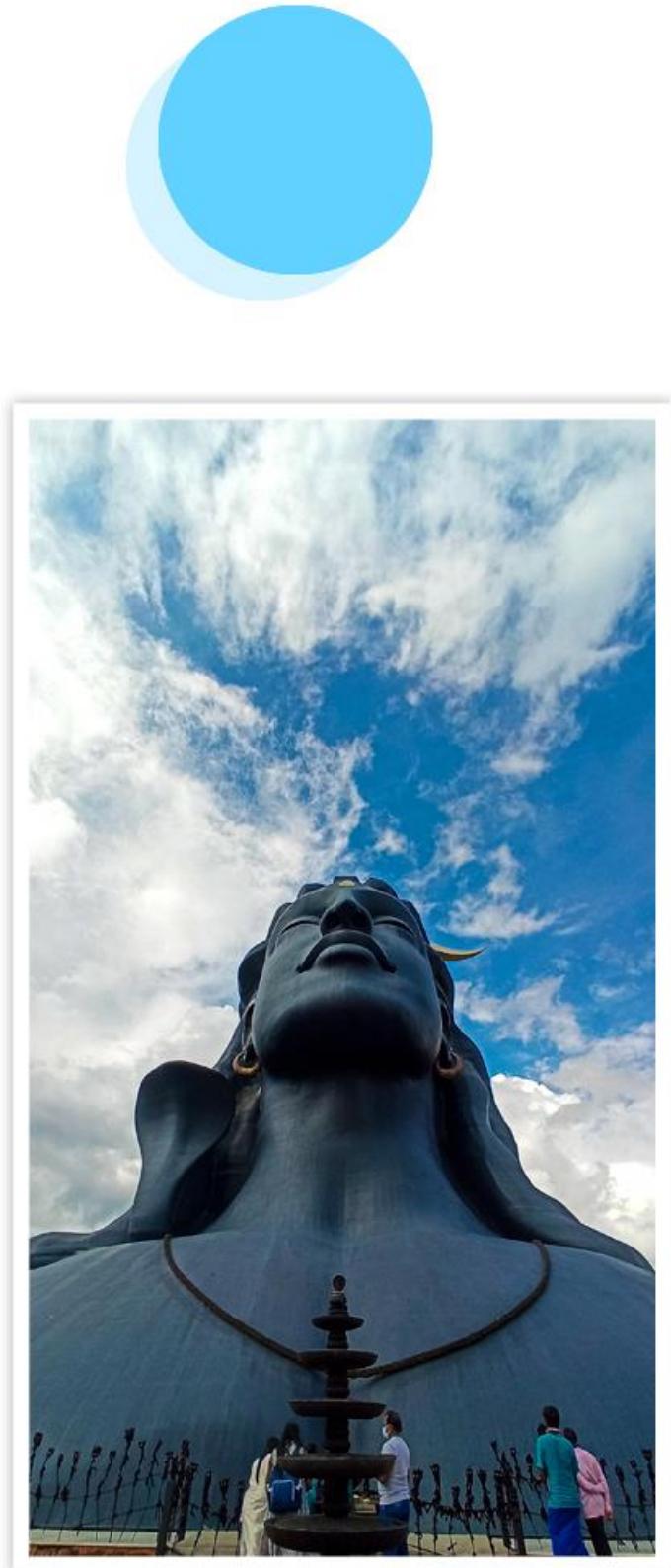


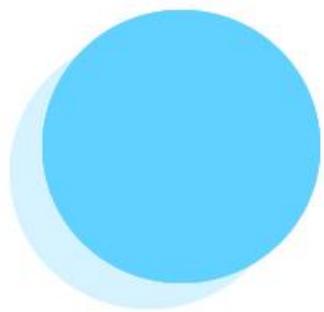
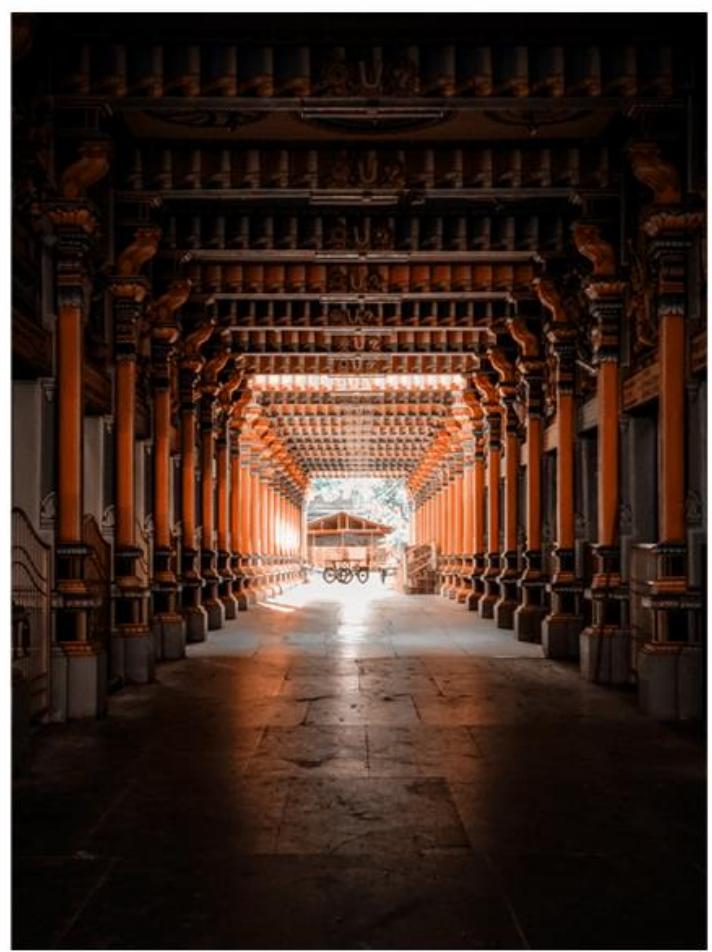
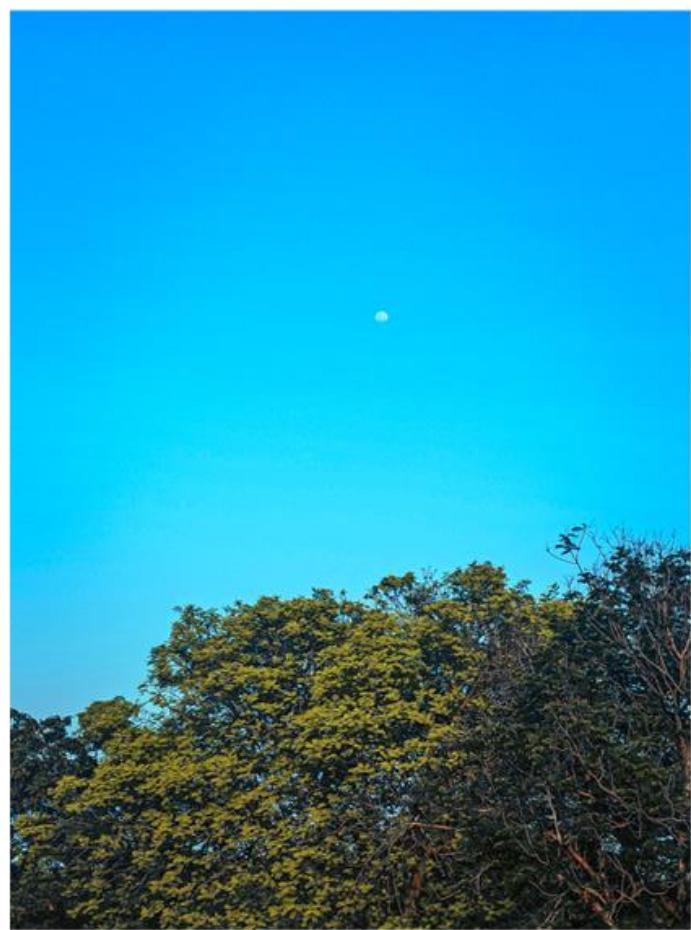
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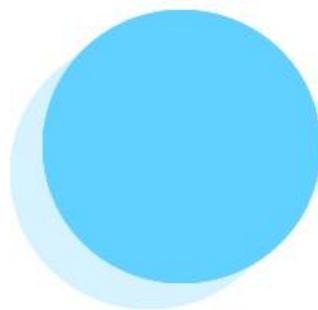
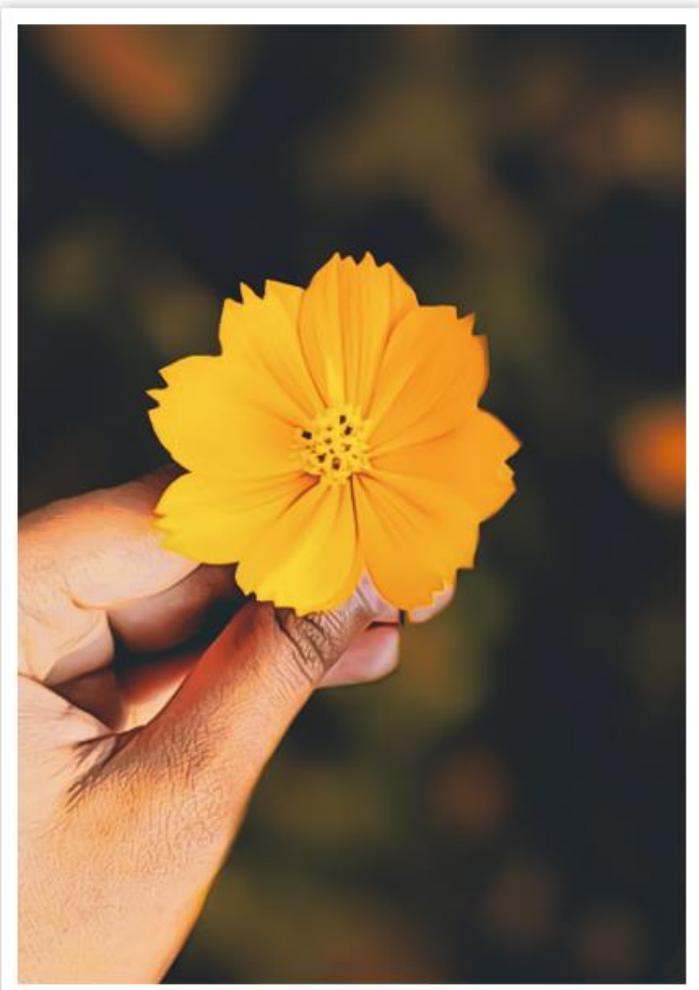
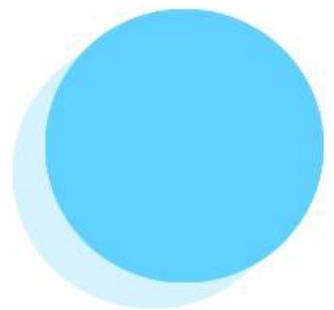


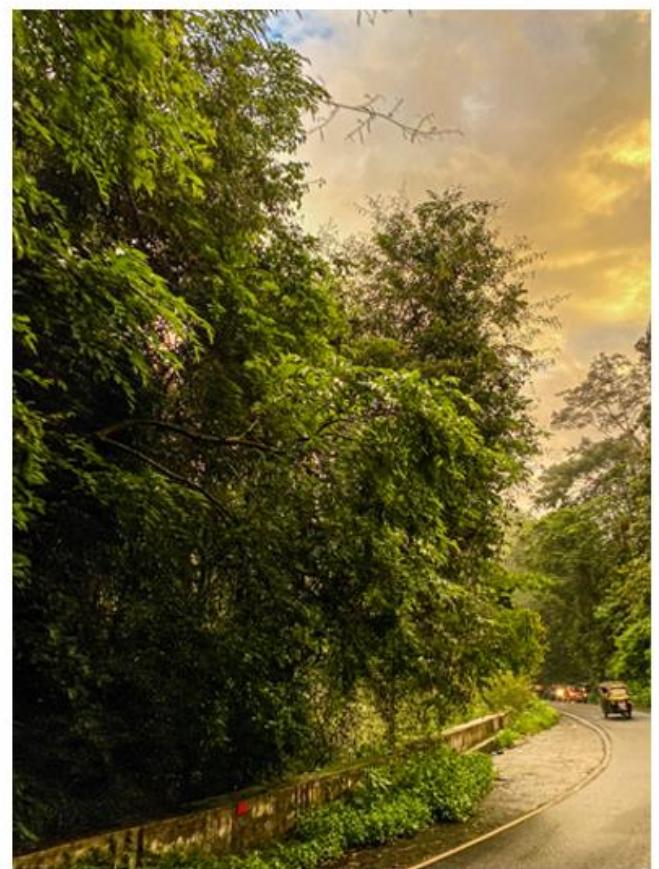
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poetry

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மழை

வானத்தில் இருந்து வந்தத்து மழை,
அதனால் நினைத்து சாலை,
மணியும் இப்போது காலை,
என் மனமும் ஆகுது பூ மலை,
பச்சை நிறத்தில் இருந்தது இலை,
இதன் மூலம் நான் அறிந்தேன் ஓர் கலை,
நானோ ஒரு கோலை,
நான் சாப்பிட்டேன் சோலை,
காலையில் வந்துது வேலை,
அதை முடித்ததும் வீட்டில் ஒரே தொல்லை,
உன்னை பார்த்து நானும் ஆகினேன் சிலை



Monisha R

19106074

III ECE B

நிலா

வெளிர் நிற ஆடைகளில் அழகாய் வருகை
தந்து மின்னொளியில் என் கண்களை
மயக்கி அவள் தேகத்தால் என்னை
குளிர வைத்து அனுதினமும் என்னை
காண மாலை மங்கும் நேரத்தில்
அவளின் சுடர்விழியால் என்னை
தீண்டி அனைத்து கொள்வாள் என் நிலவு
மங்கை



Jones Steve Walker

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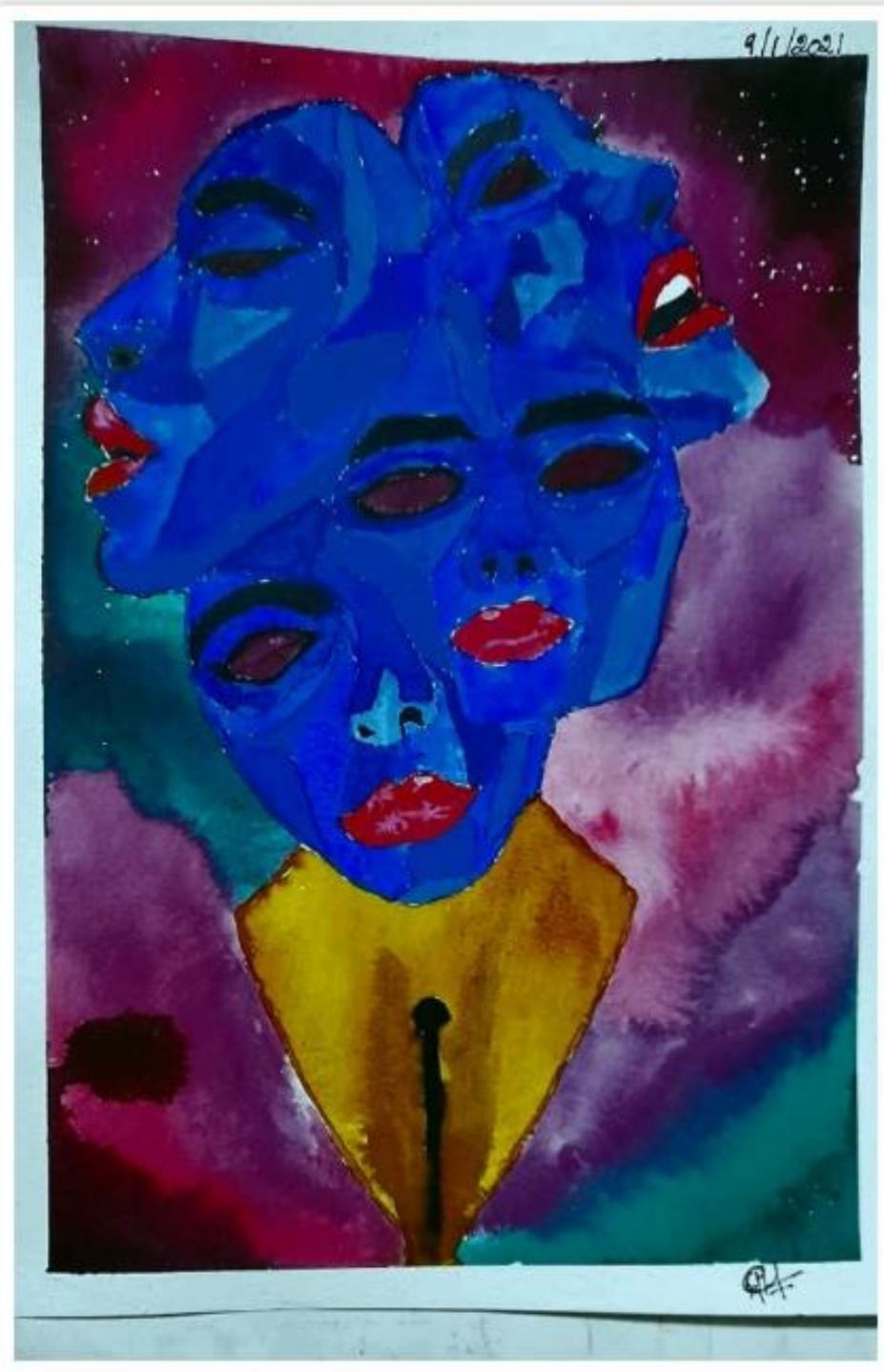
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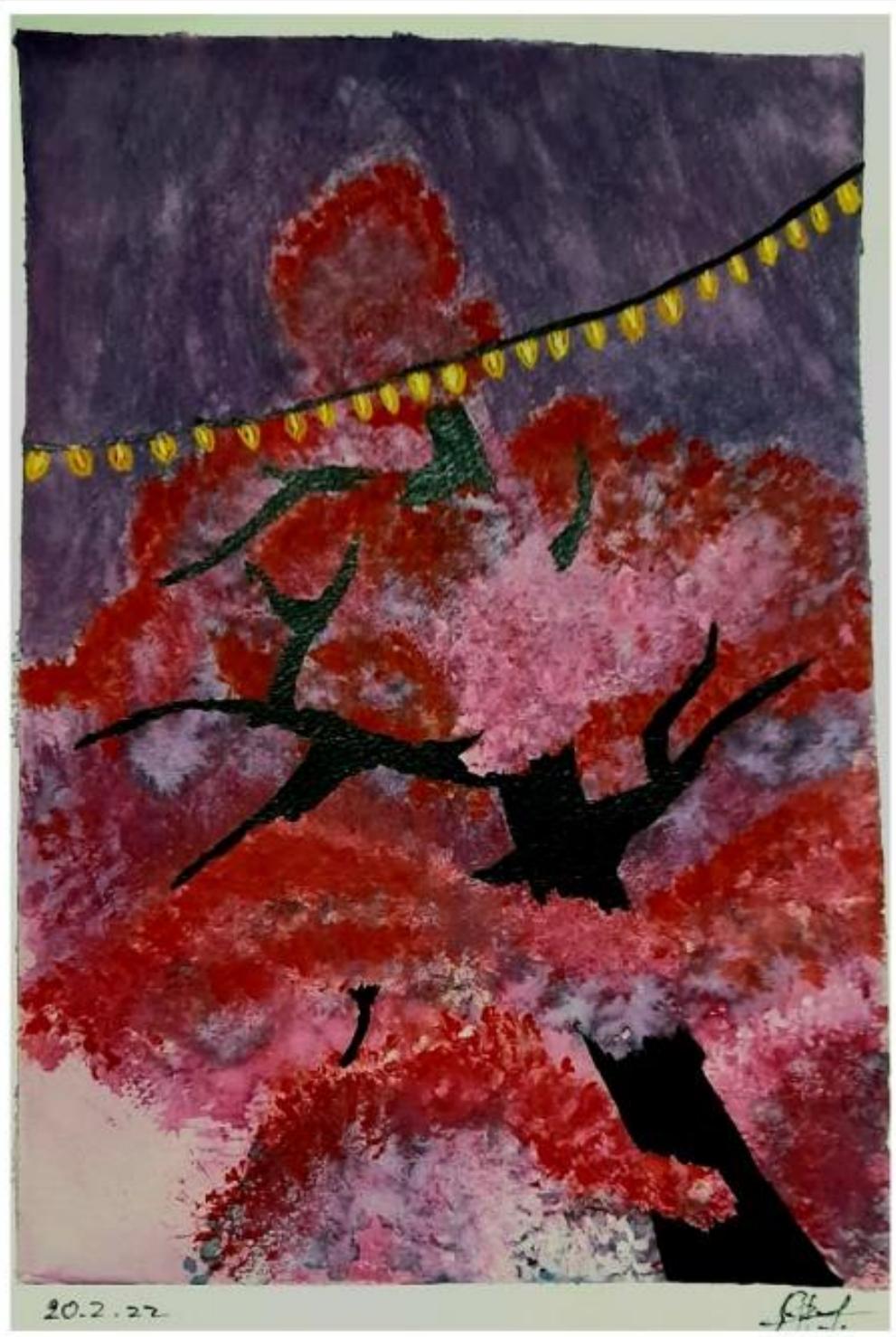
The background of the image is a vibrant, abstract painting. It features a central vertical column of red and orange paint that appears to be dripping down a textured surface. To the left, there's a large, dark teal and blue area with some white and yellow highlights, suggesting a stylized figure or landscape. The overall texture is rough and layered, with visible brushstrokes and paint splatters.

Art

26/9/2020



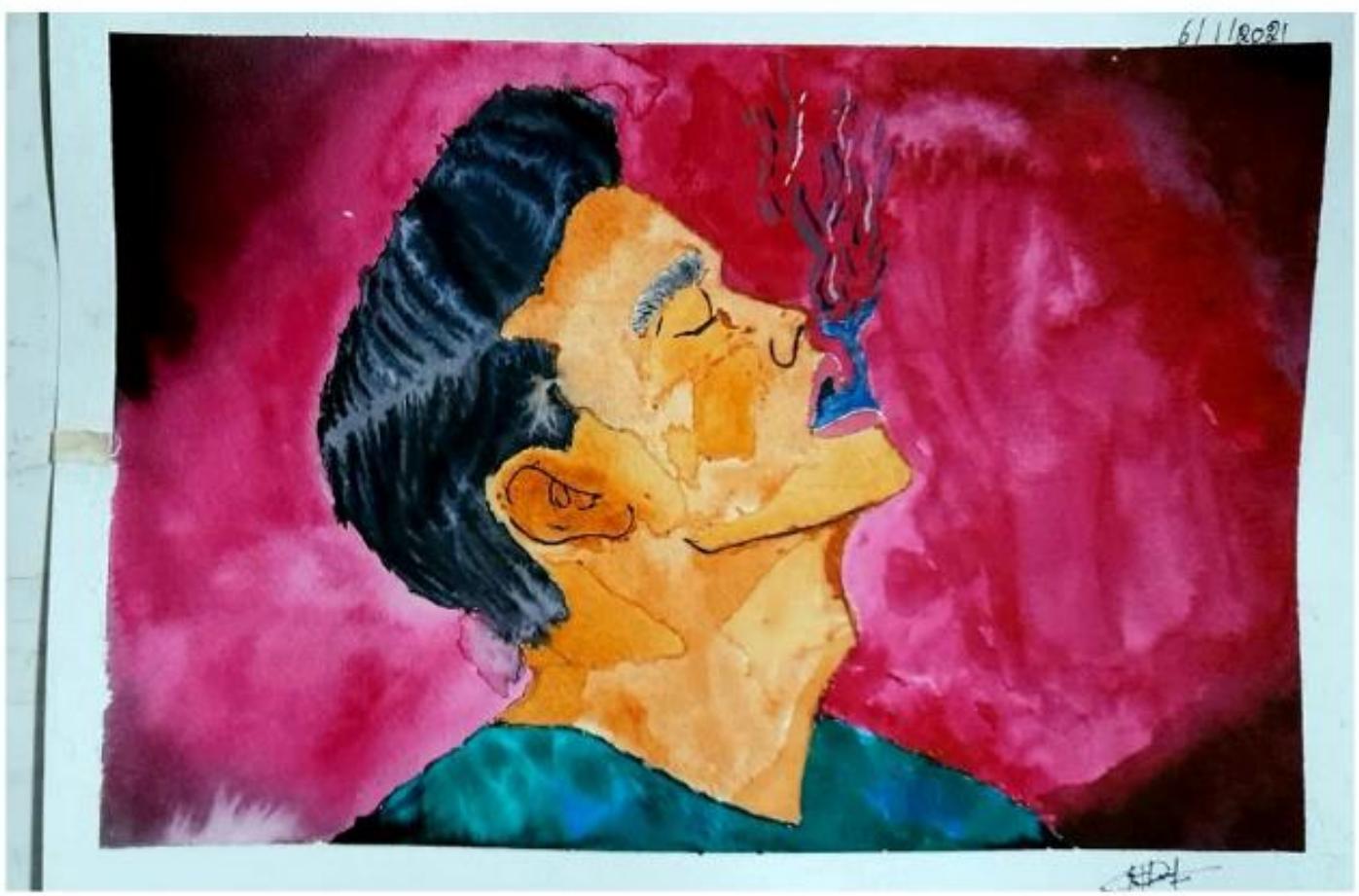




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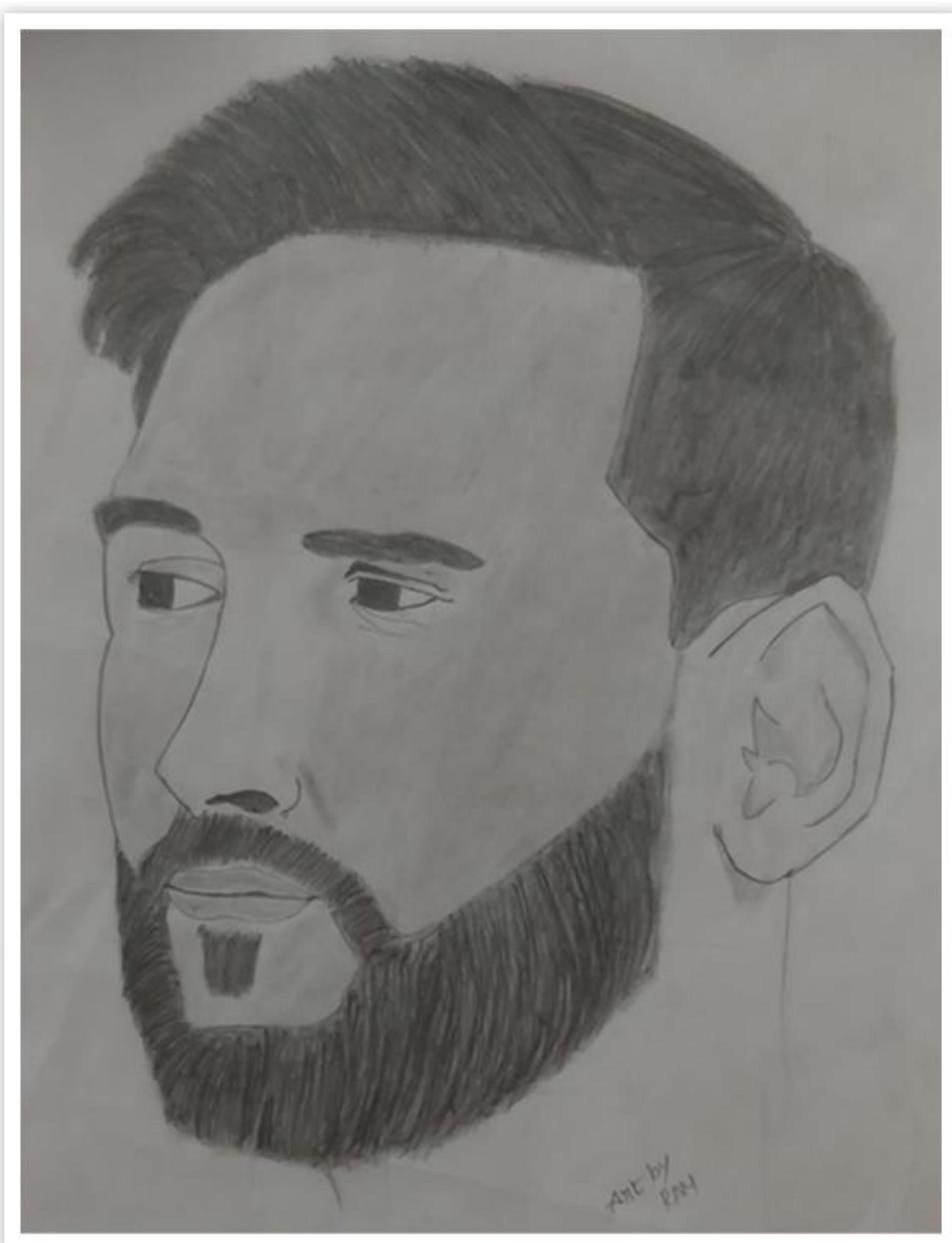




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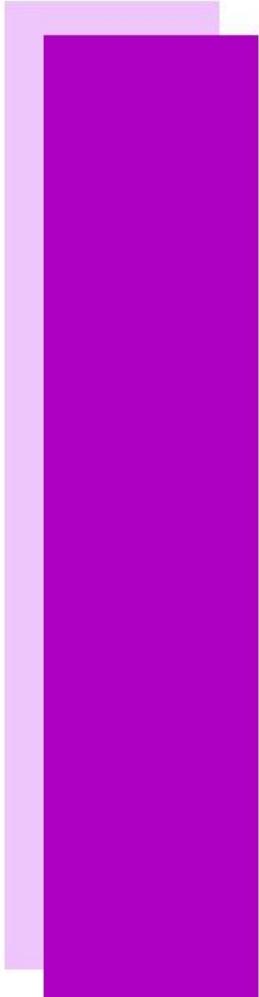
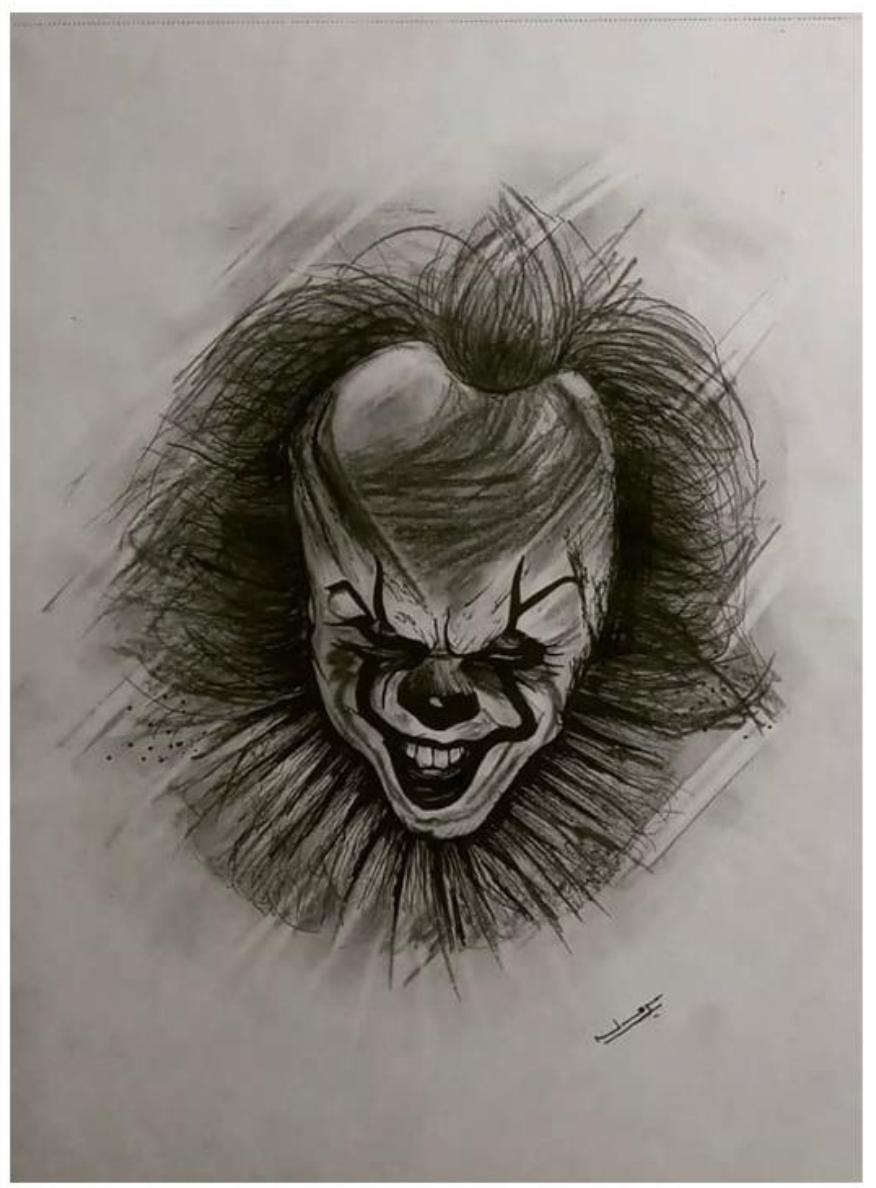




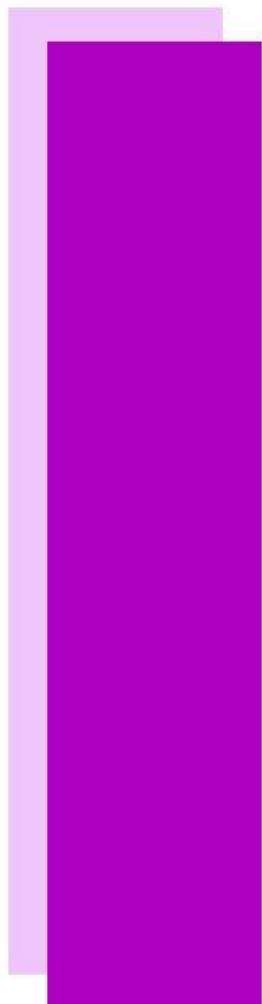


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