

**LAPORAN AKHIR**  
**MAGANG & STUDI INDEPENDEN BERSERTIFIKAT**  
**Machine Learning Path**  
**Studi Independen**  
**PT. Dicoding Akademi Indonesia**

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**2023**

## **Kata Pengantar**

Puji syukur penulis panjatkan kepada Tuhan Yang Maha Esa, atas segala nikmat, rahmat, dan karunianya yang telah diberikan sehingga dapat sehingga hingga titik ini penulis dapat menyelesaikan Program Bangkit 2023 Batch 2 dengan baik. Semua tidak terlepas dari dukungan berbagai pihak. Dengan demikian tidak lupa penulis mengucapkan termakasih kepada :

1. Koordinator MSIB Universitas Muhammadiyah Malang
2. Christian Sri Kusuma Aditya, S.Kom., M.Kom selaku dosen pembimbing MSIB Universitas Muhammadiyah Malang
3. Seluruh pihak MSIB kampus merdeka
4. Seluruh pihak Bangkit Academy
5. Tim Capstone Project Catstone yang telah bekerja sama dalam pembuatan project
6. Semua pihak terkait yang tidak dapat disebutkan satu per satu

Sebagai penulis, menyadari bahwa laporan akhir ini masih banyak kekurangan dan masih jauh dari kata sempurna. Oleh karena itu, kritik dan saran dari pembaca sangatlah diperlukan dengan tujuan membangun, memperbaiki, serta menyempurnakan sehingga laporan ini dapat dijadikan sebagai referensi untuk penyusunan laporan kegiatan sejenis.

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**Kata Pengantar**

**Daftar Isi**

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## **Bab I Gambaran Umum**

### **I.1 Profil Perusahaan**

Dicoding merupakan Perusahaan penyedia platform bagi developer Indonesia untuk belajar, membuat karya digital, meraih validasi industri atas karya tersebut, serta mencari pekerjaan di perusahaan mitra.

Visi Dicoding adalah menjadi platform edukasi teknologi terdepan yang mendorong akses literasi digital yang lebih luas untuk semua. Dicoding memiliki misi untuk mengakselerasi transisi Indonesia menuju dunia digital melalui pendidikan teknologi yang mentransformasi kehidupan.

### **I.2 Deskripsi Kegiatan**

Program yang diikuti oleh penulis dalam Studi Independen, Bangkit Academy 2023 batch 2 adalah :

Learning Path : Machine Learnig Path

Deskripsi : sebuah kelas pembelajaran yang fokus kepada pengembangan Artificial Intelegent/kecerdasan buatan melalui konsep Machine Learning/Pembelajaran Mesin klasik hingga modern. Sebagai generasi yang memasuki era gen-Z, pemahaman akan penggunaan teknologi AI maupun perancangannya akan menjadi poin tambahan untuk akselerasi pekerjaan manusia yang lebih efektif dan efisien, oleh karena itu program Bangkit Academy Machine Learning Path dapat membantu pengembangan kompetensi sumber daya manusia, terutama relevansi kebutuhan di era saat ini. Berikut adalah beberapa kompetensi yang dapat diperoleh :

1. *Analytical Thinking*
2. *Critical Thinking*
3. *Machine Learning Specialist*
4. *Data Specialist*
5. *Data Vizualitation*
6. *English Language Ability*

7. *Leadership*
8. *Project Thinking*
9. *Time Management*
10. *etc.*

Adapun untuk meraih kompetensi yang tertera diatas, dalam program learning path tersebut membagi pola pembelajaran secara interaktif dan non-interaktif. Dalam pembelajaran Interaktif hal yang dilakukan adalah melakukan sesi-sesi pertemuan bersama narasumber-narasumber profesional dan melakukan pembahasan materi serta uji pemahaman peserta dari materi yang telah disampaikan melalui pengasan yang memiliki waktu tenggang, tidak hanya itu pembelajaran interaktif juga diterapkan dalam sesi-sesi mentoring untuk memberikan arahan sehingga program yang berjalan sesuai dengan tujuan kompetensi yang telah ditetapkan.

Dalam pembelajaran non-interaktif program tersebut menyediakan dalam bentuk pelatihan kursus virtual yang disajikan oleh partnership bangkit academy penyedia kursus seperti *coursera*.

## Bab II Aktivitas Mingguan

Berikut ini adalah daftar aktivitas mingguan terkait kegiatan yang dilakukan oleh penulis selama 20 minggu terakhir :

Minggu	Kegiatan
1	this week there is some material that I got when participating in independent study activities, namely the first to get knowledge about how we take part in the program, such as always sharpening knowledge and developing skills in activities, not only that, I get about how to get up successfully, the first thing we can talk about is at the session if we don't know about the material we have to be disciplined and we have to be interested in other friends in getting up not only that we have to be optimistic, multidisciplinary and lastly we have to be human if we apply it in getting up we can be successful in getting up and we can get maximum results and what are the values held believe in the process, ground mindset always try and practice skills, have great patience for the results that will be obtained later in what we do, learn to do what you don't like, don't always because of rewards/ payment because not all work must be rewarded / paid and the last is how do we fill in activity reports such as daily reports, weekly reports and final reports, then plagiarism is prohibited in doing anything, always following activities on time
2	i learn crash course on python in the caursera the material is about the python i learn Programming languages are actually similar to spoken human languages in that they have syntax and semantics. Now if it's been a while since your last grammar class, here's a quick refresher on syntax and semantics. In human languages, syntax is the rules of how a sentence is

	<p>constructed while semantics refers to the actual meaning of the statement. In English, sentences generally have a subject, which is a person, place, or thing and the predicate is usually a verb and a statement that describes what the subject does. i learn Python makes it easy to express basic programming concepts like data structures and algorithms with easy-to-read syntax. This makes Python a great language to use for learning programming. And there are other reasons to choose Python too. Python is very popular in the IT industry, making it one of the most commonly used programming languages today I took part in a session led by Instructor Bangkit Adrianti Kusuma Widyatuti Bebyrahma about "Growth Mindset and Power of Feedback" on the Google Meet platform. did an English pre test for one hour after that there was a first weekly consultation in the meet we introduced and discussed what would be done or procedures in Bangkit academy and after that i continued to work on the crash course on python i learned the python language and i learn coursera the material about Using python intact with operating system i learn in week one to week three i learn about how to manage files and directory not only that i also learn reading and writing CSV files I also learned how to enter regular expressions and how do we find or fix when there is a syntax that we enter is wrong or an error occurs,</p>
3	<p>this week I learned coursera the material about git and github i learned in week one to week twoi learned about what is git where I was introduced to the concept of version control, which will make managing and rolling back super easy looking code. not only that, i learned coursera the material about git and github i learned in week three to week four i learned about I be introduced</p>

	<p>to GitHub and learn how it works with Git. i create new repositories and clone those repositories onto my computer. and how we can host them. i get familiar with commands like modify, stage, and commit, which will be used for local changes, as well as the fetch command, which can pull any changes from remote repositories and i learn with Mr. Dr. Eng. I Made Agus Dwi Suarjaya, S.T., M.Eng. i learn about git and github in this season i learn introduction to python python data structures introduction to git and collaboration using github in this learn i know about data types just like string integer float and boolean that have any understanding and understand what variables are and etc . I attended the second weekly consultation in the meet we introduced and discussed what would be done or procedures in Bangkit academy and in the session discussed whether additional consultations needed to be held or not which were useful to help with problems faced and last I attended 2023H2 Guest Speaker Session #1 - The Future of Work in The Age of AI where there were Giovanni Sakti and Iqbal Farabi as speakers in this session I captured how the development of AI in the field of technology where this AI can help work or human activity and I also get how to use AI properly and correctly such as searching or questions that we don't understand in a problem but not just the answer</p>
4	<p>in this week i learned coursera about Google Data Analytics (Foundation: Data, Data, Everywhere) this day i learned week 1 to week 3 All of these are great examples of real life patterns and relationships that we can use to make predictions about the right actions to take, and that is a huge part of data analysis right there. not only that i learned ILT-EN-01-097 Spoken Correspondence in</p>



	<p>this meeting i learned how to speak English well in the meet we were also given the task of speaking with friends by being given several sentences to be discussed and we also learned how to construct sentences when we were given a sentence or a problem, i learned week for our until week five the material if we set data seems to go on forever, and I am spreadsheet is struggling to keep up, SQL would be the way to go. When I am using SQL, I am needing a place where the SQL language is understood. If we've gone somewhere and don't know the language, it can be challenging to communicate. I might think we are asking for one thing and get something completely different. Well, SQL knows the feeling. SQL needs a database that will understand its language. Let's talk. There are a number of databases out there that use SQL. I may use several of them during my time as a data analyst. But here's the thing, no matter which database we use, SQL basically works for the same in each. I am taking part in Weekly Consultation 3 which is where I consult on all the activities that have been carried out during the previous week and discuss what obstacles are faced in the activities and discuss machine learning engineering, how we understand what machine learning is and what job opportunities we can get and the last, i attended ILT-SS-02-DB Time Management in this session discussing The Fundamentals of Time Management Five Principles of Effective Time Management Internal factors: ProcrastinationLack of discipline Didn't create plans and deadlines and we also discuss monotasking and multitasking, for example, monotasking, namely the scope of work may be smaller and for example, multitasking, the scope of work may be wider.</p>
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	Not only that, we also study the five pillars of time management, namely discipline, priority, focus, capacity planning, agility
5	<p>in this week i learned coursera about Analyze Data to Answer Questions Organizing data makes the data easier to use in your analysis. In this part of the course, I learned the importance of organizing my data through sorting and filtering. i explored these processes in both spreadsheets and SQL as and i learned how to Describe what is involved in the data analysis process with key tasks Discuss the importance of organizing data i learned coursera Google Data Analytics (Analyze Data to Answer Questions) in week 3 and 4 about JOIN use these keys to identify relationships and corresponding values. An inner JOIN is a function that returns records with matching values in both tables. If we think about our tables as a circle of this Venn diagram, then an inner JOIN would return the records that exist where the tables are overlapping. Not only that, I also took part in the Capstone Briefing 1 Bangkit Batch 2 which discussed the capstone which has teams from different departments and I have ILT-ML-02-AQ Data Analytics in the session discussing the Five Essential Aspects of Analytical Skills Understanding Context Having a Technical Mindset Data Design not only that, the session also discusses data analysis processes and Structured Query Language. A query is a request for data or information from a database.i learned coursera Google Data Analytics (Share Data Through the Art of Visualization) in week 3 and 4 i learned about Connecting your objectives with your data through insights is essential to good data storytelling. In this part of the course, you'll learn about data-driven stories and their attributes. You'll also gain an understanding of how to use Tableau to create dashboards and</p>

	<p>dashboard filters. Explain data-driven stories, including reference to their importance and their attributes, and last i learned Mathematics for Machine Learning and Data Science: Linear Algebra in weeks 1 and 2 Matrices are commonly used in machine learning and data science to represent data and its transformations. In this week, I will learn how matrices naturally arise from systems of equations and how certain matrix properties can be thought in terms of operations on systems of equations.</p>
6	<p>in this week I have a report to the supervisor about what has been done while following the program via chat and I have a weekly consultation schedule which discusses what we have learned in the last week and how the progress is and we also discussed what needs to be done. be done in the next week. Not only that, I also met with my capstone group to discuss what theme we would take in working on the final project of the Bangkit program, i learn Coursera Linear Algebra for Machine Learning and Data Science in week 2 i will learn how to solve a system of linear equations using the elimination method and the row echelon form. i will also learn about an important property of a matrix: the rank. The concept of the rank of a matrix is useful in computer vision for compressing images, i will learn about properties and operations of vectors. and i will also learn about linear transformations, matrix inverse, and one of the most important operations on matrices: the matrix multiplication. not all that will see how matrix multiplication naturally arises from composition of linear transformations. Finally, I will learn how to apply some of the properties of matrices and vectors that I have learned so far to neural networks. Perform common operations on vectors like sum, difference, and dot product, not only that i learn</p>

	<p>Mathematics for Machine Learning and Data Science: Calculus if you have a function in two variables, I can slice it in two ways, treating <math>y</math> as a constant and treating <math>x</math> as a constant. Each one gave me a different partial derivative. The first gives me the partial derivative of <math>df</math> over <math>dx</math>, which is <math>2x</math>, and the second gives me the partial derivative of <math>df</math> over <math>dy</math>, which is <math>2y</math>. how to calculate this derivative, there will be a lot of chain rules. On the left we have the function for reference and on the right I will calculate the partial derivative. First of all, what is <math>dL</math> over <math>db</math>? Well, look at <math>L</math>, <math>L</math> depends on the variable <math>\hat{y}</math> so we need to do <math>dL</math> over <math>d\hat{y}</math> and then <math>\hat{y}</math> depends on <math>b</math> so <math>d\hat{y}</math> over <math>db</math>. This is nothing more than a chain rule and in this day I learn Mathematics for Machine Learning and Data Science: Probability &amp; Statistics probability is a measure of how likely an event is to occur. For example, if I toss a fair coin, the probability of it landing on heads is 50 percent or <math>1/2</math>. If I roll the dice, the probability of it landing on a 4, is <math>1/6</math>.</p>
7	<p>in this week I am taking part in Weekly Consultation 3 which is where I consult on all the activities that have been carried out during the previous week and discuss what obstacles are faced in the activities and discuss machine learning engineering, how we understand what machine learning is and what job opportunities we can get, i learned about probability of events and various rules of probability to correctly do arithmetic with probabilities. You will learn the concept of conditional probability and the key idea behind Bayes theorem. In lesson 2, we generalize the concept of probability of events to probability distribution over random variables. You will learn about some common probability distributions like the Binomial distribution</p>

	<p>and the Normal distribution. and I learned about different measures to describe probability, i learn coursera Probability &amp; Statistics for Machine Learning &amp; Data Science in weeks 2 and 4 i learn shifts its focus from probability and statistics. i will start by learning the concept of a sample and a population and two fundamental results from statistics that concern samples and population: the law of large numbers and the central limit theorem. In lesson 2, I will learn the first and the simplest method of estimation in statistics: point estimation. i will see how maximum likelihood estimation, the most common point estimation method, works and how it connects with regularization (technique used to reduce overfitting in machine learning) using Bayes theorem and i learn another estimation method called interval estimation. and the last I took part in ILT-ML-03-BG Introduction to Machine Learning in this session discussing what Recognize basic concepts in machine learning are, Elaborate how the linear regression model works, Elaborate how the logistic regression model works, Types of Machine Learning: Machine Learning, Reinforcement Learning,</p>
8	<p>in this week i learn coursera Supervised Machine Learning: Regression and Classification in week 1 we joined millions of others who have taken either this or the original course, which led to the founding of Coursera, and has helped millions of other learners, i learn coursera Supervised Machine Learning: Regression and Classification in week 1 we joined millions of others who have taken either this or the original course, which led to the founding of Coursera, and has helped millions of other learners, i learn coursera Supervised Machine Learning: Regression and Classification in week 1 we joined millions of</p>

	<p>others who have taken either this or the original course, which led to the founding of Coursera, and has helped millions of other learners, i learn coursera Supervised Machine Learning: Regression and Classification in week 2 i will extends linear regression to handle multiple input features. You'll also learn some methods for improving your model's training and performance, learn coursera Supervised Machine Learning: Regression and Classification in week 3 you'll learn the other type of supervised learning, classification. You'll learn how to predict categories using the logistic regression model. learn coursera Advanced Learning Algorithms in week 1 This week, I will learn about neural networks and how to use them for classification tasks. i will use the TensorFlow framework to build a neural network with just a few lines of code. Then, dive deeper by learning how to code up your own neural network in Python, "from scratch". will learn how to train me model in TensorFlow, and also learn about other important activation functions (besides the sigmoid function), and where to use each type in a neural network. i will also learn how to go beyond binary classification to multiclass classification (3 or more categories). and in this week I studied ILT-SS-04-DG Adaptability and Resilience</p>
9	<p>in this week i learn coursera Supervised Machine Learning: Regression and Classification in week 1 we joined millions of others who have taken either this or the original course, which led to the founding of Coursera, and has helped millions of other learners, i learn coursera Supervised Machine Learning: Regression and Classification in week 1 we joined millions of others who have taken either this or the original course, which led to the founding of Coursera, and has helped millions of other</p>

	<p>learners, i learn coursera Supervised Machine Learning: Regression and Classification in week 1 we joined millions of others who have taken either this or the original course, which led to the founding of Coursera, and has helped millions of other learners, i learn coursera Supervised Machine Learning: Regression and Classification in week 2 i will extends linear regression to handle multiple input features. You'll also learn some methods for improving your model's training and performance, learn coursera Supervised Machine Learning: Regression and Classification in week 3 you'll learn the other type of supervised learning, classification. You'll learn how to predict categories using the logistic regression model. learn coursera Advanced Learning Algorithms in week 1 This week, I will learn about neural networks and how to use them for classification tasks. i will use the TensorFlow framework to build a neural network with just a few lines of code. Then, dive deeper by learning how to code up your own neural network in Python, "from scratch". will learn how to train me model in TensorFlow, and also learn about other important activation functions (besides the sigmoid function), and where to use each type in a neural network. i will also learn how to go beyond binary classification to multiclass classification (3 or more categories). and in this week I studied ILT-SS-04-DG Adaptability and Resilience</p>
10	<p>in this week i i l join Weekly Consultation 9 - ML-18 which is a place where I consult on all activities that have been carried out during the previous week and discuss what obstacles were faced in these activities as well as discussing machine learning techniques i l join Weekly Consultation 9 - ML-18 which is a place where I consult on all activities that have been carried out during the previous week and discuss what obstacles were faced in these activities as well as discussing machine learning</p>

	<p>techniques and I learned the Fundamentals of Project Management, Implement Five Phases of Project Management, Recognize the Important Aspects for Project Success The Essential of Project Initiation An initiation phase where stakeholders and project managers identify what problems need to be solved. In this part, a project should be defined broadly and as an opportunity for a project manager to secure stakeholders' buy-in and Introduction to TensorFlow for Artificial Intelligence, Machine Learning, and Deep Learning Coding has been the bread and butter of developers since the dawn of computing. We are used to building applications by breaking down requirements into composable problems that can then be coded. one layer, with one neuron, and one input value. It will now compile the neural network using the loss function and optimizer. Remember, this helps the neural network guess the pattern, measuring how well or how poorly the guess was done, before trying again in subsequent epochs, and slowly becoming more accurate. one layer, with one neuron, and one input value. It will now compile the neural network using the loss function and optimizer. Remember, this helps the neural network guess the pattern, measuring how well or how poorly the guess was done, before trying again in subsequent epochs, and slowly becoming more accurate. Collaboratory, or “Colab” for short, is a product from Google Research. Colab allows anyone to write and execute arbitrary python code through the browser, and is especially well suited to machine learning, data analysis and education. More technically, Colab is a hosted Jupyter notebook service that requires no setup to use, while providing free access to computing resources including GPUs. Resources in Colab are prioritized for interactive use cases. We prohibit actions associated with bulk computing, actions that negatively impact others, as well as actions associated with bypassing our policies. The following are disallowed from Colab runtimes: file hosting, media serving, or other web service offerings not related to interactive compute with Colab downloading torrents or engaging in peer-to-peer file-sharing remote control such as SSH shells</p>
11	<p>in this week I join Weekly Consultation 10 - ML-18 which is a place where I consult on all activities that have been carried out during the previous week and discuss what obstacles were faced in these activities as well as discussing machine learning</p>



	<p>techniques Not only that , we are also given time to discuss with fellow classmates about the activities that have been carried out in the past week. Not only that, the session also discussed the capstone, how to get data, determine the data in the project that will be taken i learned Introduction to TensorFlow for Artificial Intelligence, Machine Learning, and Deep Learning i learned all about how Machine Learning and Deep Learning is a new programming paradigm. This week you're going to take that to the next level by beginning to solve problems of computer vision with just a few lines of code! Check out this conversation between Laurence and Andrew where they discuss it and introduce you to Computer Vision! Learning Objectives : Use callback functions for tracking model loss and accuracy during training, Make predictions on how the layer size affects network predictions and training speed, Implement pixel value normalization to speed up network training, Use callback functions to interrupt training after meeting a threshold accuracy , Test the effect of adding convolution and MaxPooling to the neural network for classifying Fashion MNIST images on classification accuracy, Explain and visualize how convolution and MaxPooling aid in image classification tasks, Reflect on the possible shortcomings of your binary classification model implementation Execute image preprocessing with the Keras ImageDataGenerator functionality Carry out real life image classification by leveraging a multilayer neural network for binary classification, It is a common mistake that people redirect generators to sub-directories. It would fail under such circumstances. You should always point it to a directory containing sub-directories containing images. The names of the sub-directories will become labels for the images contained within them. So make sure that the directory you are pointing to is the correct one. put it in the second parameter like this. Now, images may come in all shapes and sizes and unfortunately in order to train a neural network, all input data needs to be the same size, so the images need to be resized to be consistent. The nice thing about this code is that the image is resized for you as it loads.</p>
12	<p>in this week I join Weekly Consultation 11 - ML-18 which is a place where I consult on all activities that have been carried out</p>

	<p>during the previous week and discuss what obstacles were faced in these activities as well as discussing machine learning techniques Not only that , we are also given time to discuss with fellow classmates about the activities that have been carried out in the past week. Not only that, the session also discussed the capstone, how to get data, determine the data in the project that will be taken. Not only that, I also studied coursera Convolutional Neural Networks in TensorFlow in weeks 1 and 2 an introduction to TensorFlow, and how , with its high level APIs you can do basic image classification, and you learned a little bit about Convolutional Neural Networks (ConvNets ). In this course you'll go deeper into using ConvNets will real-world data, Building models for myself is great, and can be very powerful. But, as I have seen, I can be limited by the data I have on hand. Not everyone has access to massive datasets or the computing power that's needed to train them effectively. Transfer learning can help solve this -- where people with models trained on large datasets train them, so that I can either use them directly, or, I can use the features that they have learned and apply them to my scenario. This is Transfer learning, Build a multiclass classifier for the Sign Language MNIST dataset, understand sentiment in text, and in particular when training a neural network to do so is the tokenization of that text. This is the process of converting the text into numeric values, with a number representing a word or a character. Tokenizer and pad_sequences APIs in TensorFlow and how they can be used to prepare and encode text and sentences to get them ready for training neural networks, Embeddings, where these tokens are mapped as vectors in a high dimensional space, sentiment analysis -- words such as 'fun' and 'entertaining' might show up in a positive movie review, and 'boring' and 'dull' might show up in a negative one. But sentiment can also be determined by the sequence in which words appear. For example, you could have 'not fun', which of course is the opposite of 'fun'. digging into a variety of model formats that are used in training models to understand context in sequence, learned in training a neural network based on NLP, we thought it might be a bit of fun to turn the tables away from classification and use your knowledge for predictions. not only that, I also studied Sequences, and Professional Communications and Networking in the session i learning Understand the frameworks and forms for maintaining</p>
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	<p>effective communications Gain a basic understanding of various SOCIAL STYLES and how to utilize them Understand networking principles and implement them effectively We can spend almost our entire day communicating. So, it stands for the reason that communicating clearly and effectively can boost productivity. Effective communication skills are critical for success in almost any profession. and i learned coursera Sequences, Time Series and Prediction in weeks 2 3 and 4 Having explored time series and some of the common attributes of time series such as trend and seasonality, and then having used statistical methods for projection</p>
13	<p>in this week I join Weekly Consultation 12 - ML-18 which is a place where I consult on all activities that have been carried out during the previous week and discuss what obstacles were faced in these activities as well as discussing machine learning techniques Not only that , we are also given time to discuss with fellow classmates about the activities that have been carried out in the past week. Not only that, the session also discussed the capstone, how to get data, determine the data in the project that will be taken, I join ILT-ML-06-AK Model Deployment with TensorFlow in this meet discussing Recognize basic concepts in Machine Learning Deployment, Elaborate how to use TensorFlow.js, TensorFlow Lite, &amp; TensorFlow Serving, Recognize basic concepts in Federated Learning, Elaborate how to use TensorFlow Dataset and The Challenges of Model Deployment ML models are sensitive to incoming data's semantics, quantity, and completeness, The performance of ML models in production degrades over time due to changes in actual data, ML models only work with data from a specific demographic.TensorFlow.js An open-source JavaScript library for training and deploying machine learning models in the client's browser or Node.js server and I learn coursera deep learning Structuring Machine Learning Projects Streamline and optimize your ML production workflow by implementing strategic guidelines for goal-setting and applying human-level performance to help define key priorities. Learning Objectives Explain why Machine Learning strategy is important, Apply satisfying and optimizing metrics to set up your goals for ML projects, Choose a</p>

	<p>correct train/dev/test split of your dataset, Define human-level performance, Use human-level performance to define key priorities in ML projects, Take the correct ML Strategic decisions based on observations of performances and dataset Develop time-saving error analysis procedures to evaluate the most useful options to pursue and gain intuition for how to split your data and when to use multi-task , transfer, and end-to-end deep learning. Learning Objectives Describe multi-task learning and transfer learning Recognize bias, variance and data-mismatch by looking at the performances of your algorithm on train/dev/test sets</p>
14	<p>in this week I join Weekly Consultation 13- ML-18 which is a place where I consult on all activities that have been carried out during the previous week and discuss what obstacles were faced in these activities as well as discussing machine learning techniques Not only that , we are also given time to discuss with fellow classmates about the activities that have been carried out in the past week. Not only that, the session also discussed the capstone, I joined ILT-EN-03-119 Business Presentation in this session I learned about how to present well, what are the contents of the material that we will present in order to attract listeners to listen to our presentation and not lose The important thing is how to speak in front of many people or when we are making a presentation. It is important to speak or interact with the audience and i learned coursera Browser-based Models with TensorFlow.js, the first course of the TensorFlow for Data and Deployment Specialization how to train machine learning models in the browser and how to use them to perform inference using JavaScript. This will allow you to use machine learning directly in the browser as well as on backend servers like Node.js. In the first week of the course, we are going to build some basic models using JavaScript and we'll execute them in simple web pages. Use</p>

	<p>TensorFlow.js to build and train simple machine learning models in JavaScript, Describe the key characteristics of one-hot encoding, Use TensorFlow.js to load data from a CSV file, Use Web Server for Chrome to serve web pages from a local folder over the network using HTTP, look at Computer Vision problems, including some of the unique considerations when using JavaScript, such as handling thousands of images for training. By the end of this module you will know how to build a site that lets you draw in the browser and recognizes your handwritten digits Use tf-vis to visualize the output of callbacks, Use a convolutional neural, network to build a handwriting classifier, Use a sprite sheet to train a classifier</p>
15	<p>in this week I learned Browser-based Models with TensorFlow.js in week three how to take models that have been created with TensorFlow in Python and convert them to JSON format so that they can run in the browser using JavaScript. We will start by looking at two models that have already been pre-converted. One of them is going to be a toxicity classifier, which uses NLP to determine if a phrase is toxic in a number of categories; the other one is Mobilenet which can be used to detect content in images. By the end of this module, you will train a model in Python yourself and convert it to JSON format using the tensorflow.js converter Use the tensorflow.js converter to convert a Keras model to JSON format, Use a toxicity model to determine if a phrase is toxic in a number of categories and Use Mobilenet to detect objects in images an exciting technology that allows you to put your models directly and literally into people's hands. You'll start with a deep dive into the technology, and how it works, learning about how you can optimize your models for mobile use -- where battery power and processing power become an important factor. You'll then look at building applications on Android and iOS that use models, and you'll see how to use the TensorFlow Lite Interpreter in these environments. You'll wrap up the course with a look at embedded systems and microcontrollers, running your models on Raspberry Pi and SparkFun Edge boards.</p>

	<p>Don't worry if you don't have access to the hardware Understand how TensorFlow Lite works under the hood Describe how model quantization works Explain how GPU delegates work Explain the Optimization techniques available in TensorFlow Lite how to convert your models from TensorFlow to TensorFlow Lite format. You also learned about the standalone TensorFlow Lite Interpreter which could be used to test these models. You wrapped with an exercise that converted a Fashion MNIST based model to TensorFlow Lite and then tested it with the interpreter. This week you'll look at the first of the deployment types for this course: Android. Android is a versatile operating system that is used in a number of different device types, how to take models and run them on iOS. You'll need some programming background with Swift for iOS to fully understand everything we went through, but even if you don't have this expertise, I think this weeks content is something you'll find fun to explore Understand how to incorporate a TF Lite model into iOS apps Create an iOS app that performs image classification Create an iOS app that performs object detection The final step is to explore embedded systems like Raspberry Pi, and learn how to get your models running on that. The nice thing is that the Pi is a full Linux system, so it can run Python, Create a streamlined pipeline for model training Apply your data pipeline building skills in the assignment by creating a complete ETL pipeline using the TFDS API, and defining a simple CNN model which can be trained later on Compare Python slicing operations with Splits API Explore TFRecords and individual samples in a dataset</p>
16	<p>in this week I join Weekly Consultation 15- ML-18 which is a place where I consult on all activities that have been carried out during the previous week and discuss what obstacles were faced in these activities as well as discussing machine learning techniques Not only that , we are also given time to discuss with fellow classmates about the activities that have been carried out in the past week. Not only that, the session also discussed the capstone, how to get data, determine the data in the project that will be taken. Not only that, I have also collected some data in</p>

	<p>installments for group projects and I repeated the Browser-based Models with TensorFlow.js lesson to work on a submission on how to take a model that has been created with TensorFlow in Python and convert it to JSON format so that it can run in a browser using JavaScript. We'll start by looking at two previously converted models. One is a toxicity classifier, which uses NLP to determine whether a phrase is toxic in several categories; the other is Mobilenet which can be used to detect content in images. At the end of this module, you will train your own model in Python and convert it to JSON format using the tensorflow.js converter. Use the tensorflow.js converter to convert Keras models to JSON format Use toxicity models to determine whether a phrase is toxic in several categories and Use Mobilenet to detect objects in images an interesting technology that allows you to put your model directly and literally into people's hands. You'll start by diving into the technology and how it works, learning how to optimize models for mobile use -- where battery life and processing power are important factors. You'll then see how to create apps on Android and iOS that use models, and you'll see how to use TensorFlow Lite Interpreter in these environments how TensorFlow Lite works explains how model quantization works Explains how GPU delegation works Explains the Optimization techniques available in TensorFlow Lite how to convert your model from TensorFlow to TensorFlow Lite format. You also learn the standalone TensorFlow Lite Interpreter that can be used to test these models. You complete an exercise that converts a Fashion MNIST-based model to TensorFlow Lite, then test it with the translator of looking at the first implementation type for this course: Android. Android is a versatile operating</p>
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	<p>system used on a number of different types of devices, how to take a model and run it on iOS. You'll need a background in programming with Swift for iOS to fully understand everything we've gone through, but even if you don't have this skill, I think this week's content is something you'll enjoy exploring</p>
17	<p>in this week I join Weekly Consultation 16- ML-18 which is a place where I consult on all activities that have been carried out during the previous week and discuss what obstacles were faced in these activities as well as discussing machine learning techniques Not only that , we are also given time to discuss with fellow classmates about the activities that have been carried out in the past week. Not only that, the session also discussed the capstone, how to get data, determine the data in the project that will be taken not only that in this week I worked on submissions A and B, each submission I worked on for approximately 4 hours and each submission there were several obstacles in the code which I am still not very skilled at working on, not only that, I Today also continues the development of my capstone project in data modeling for the project that will be built I re-learned Browser- based Models with TensorFlow.js due to some problems in working on previous submissions Use different libraries and techniques to export your data to a new training pipeline Train with ready-made pipelines that reduce development time You significantly Create different feature columns using functions such as bucketing , hashing and tokenizing Compare and contrast the different types of data present in TensorFlow Data classes with practice quizzes while elaborating more on data operations such as one-hot encoding, I worked on submissions c, each submission I worked on for approximately 4 hours and each</p>



	<p>submission there were several obstacles in the code which I am still not very skilled at working on and finally on that day This submission has been approved by the proofreader and I also helped my capstone group</p>
18	<p>in this week I join Weekly Consultation 17- ML-18 which is a place where I consult on all activities that have been carried out during the previous week and discuss what obstacles were faced in these activities as well as discussing machine learning techniques Not only that , we were also given time to play together and I also joined Bangkit 2023 H2 - Student Team Meeting 4 permission and abstract immediately if your attendance on the student dashboard still has abst status even after submitting the abstract or permission kindly wait for the updated attendance status will no l than the December 26 I helped the capstone team to complete unfinished capstone projects such as creating the contents of the application and checking the model that had been created I did an English post test which consisted of listening to the sounds and verbs that had been taught from start to finish, continuing to help the capstone team to complete unfinished capstone projects such as paying in installments to make a power point and working on a proposal for the team capstone in the first day of this week December, 14, today I did an English post test which consisted of listening to the sounds and verbs that had been taught from start to finish, continuing to help the capstone team to complete unfinished capstone projects such as paying in installments to make a power point and working on a proposal for the capstone team help the capstone team to complete unfinished capstone projects such as paying in installments to make power points and working on proposals for the capstone team and I also</p>

	studied a little coursera so I wouldn't forget to get the certificate later in the first day in this week December, 15 I continued today to help the capstone team to complete unfinished capstone projects such as paying in installments to make power points and working on proposals for the capstone team and I also studied a little coursera so I wouldn't forget to get the certificate later
19	in this week In Weekly Consultation 18- ML-18 which is a place where I consult on all activities that have been carried out during the previous week and discuss what obstacles were faced in these activities as well as discussing machine learning techniques Not only that, we are also given time to discuss with fellow classmates about the activities that have been carried out in the past week I helped the capstone project team to create power points that were used to present the results of my team's work and also check again whether the application was running as desired. my team and I made a video presentation here I present what we have done for each division and this presentation is videoed and then uploaded on YouTube i studied again for coursera and tried to make a final report in installments for this activity
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## **Bab III       =Penutup**

### **III.1   Kesimpulan**

Mengikuti Program Studi Independen (*Bangkit Academy 2023 Batch 2*) merupakan suatu kesempatan istimewa bagi penulis dalam mengakselerasi ilmu pengetahuan dan pengembangan diri. Hal itu tercakup semua dalam kegiatan-kegiatan seperti *Self Learning Course, Instructure Learning Teach, Consultation dan Making Team Work dalam sebuah proyek*. Dari sekian cakupan kegiatan yang ada tentu semua terorganisir melalui target yang diset dengan time management, sehingga substansi yang dihadirkan yakni menjadikan personal yang professional dan memiliki kapabilitas yang mumpuni baik dari segi hard-skill maupun soft-skill dapat dicapai dengan maksimal.

### **III.2   Saran**

Selama hampir 6 bulan berjalan sistem penjalanan kegiatan Studi Independen (*Bangkit Academy 2023 batch 2*) menurut penulis 95% sudah cukup baik dan sangat memudahkan para peserta yang mengikuti agenda ini. Dan untuk mencapai persentase yang lebih meningkat lagi penulis mengharapkan mekanisme pemilihan instruktur mentor dan Supervisor Konsultan proyek capstone lebih diperhatikan, bukan hanya di kapabilitas yang dimiliki oleh mereka, namun juga Tanggung Jawab dan Konsistensinya.

## **Referensi**

- [1] Anggi Dwi Cantika, 2023, "*Proposal Bangkit 2023*"
- [2] M Ibnu Ervikhan, 2022, "*Laporan Studi Independen Google Bangkit*"
- [3] Narendra Wicaksono, *dicoding .com*

**Lampiran**

*Sertifikat, Screenshoot Agenda, Progres Capstone, Hasil Capstone.*