



INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

“NEXT-GEN HIRING FLASK-BASED AI INTERVIEW ANALYSIS THROUGH AUDIO AND VIDEO PROCESSING”

B.Ahamed Yusouf¹, S. Arumugam²

Final Year Learner, Department of computer science, Periyar Maniammai Institute of Science and Technology,

Thanjavur 613403, Tamilnadu, India¹,

Associate Professor, Department of computer science, Periyar Maniammai Institute of Science and Technology,

Thanjavur 613403, Tamilnadu, India²

Abstract: By developing a cutting-edge web-based interview platform, the project "Hiring Flask-based AI Interview Analysis through Audio and Video Processing" seeks to transform the hiring procedure. With Flask serving as the foundation, the system incorporates AI to provide thorough interview analysis. During applicant interviews, OpenCV is used for video processing, with a focus on computer vision techniques to assess non-verbal clues, facial expressions, and other visual elements. PyAutoGUI is also used to offer automation capabilities, which could improve user experience and streamline the interview workflow. The project attempts to give a smart and effective tool for objective candidate assessment by combining Flask, OpenCV, and PyAutoGUI, providing a seamless and automated solution for the hiring business. This cutting-edge platform offers a strong foundation for AI-driven analysis of audio and video files, as well as user-friendly automation features made possible by PyAutoGUI. The project is a viable option for businesses looking to integrate automation technologies, artificial intelligence (AI), and Flask to streamline their employment processes because of its dual focus on cutting-edge technology and user convenience. Compared to conventional synchronous video interviews (SVIs), employment screening can be done more effectively with the implementation of AI-based decision agents and asynchronous video interviews (AVIs). Nevertheless, no research has been done on the social effects of employing synchronization and AI decision agents in video interviews. This study used a unique experimental setup based on the theories of social interface and media richness, to compare job applicants' perceptions of fairness between the AVI setting and the SVI setting using an AI decision agent (AVI-AI), as well as human ratings and job applicants' response behaviors between the SVI and AVI settings. The 180 observations' worth of data showed that first impressions and physical appearance greatly influenced structured interview scores, even in cases when the video interview was not synchronous, and AVIs were less effective than SVIs.

Index Terms - corrupted, illegal mining, spam aware, Interrupt occurrence.

I. INTRODUCTION

This article's objective is to give AI interview analysis with face detection and identification while processing audio and video. A bespoke login screen that can block user access based on facial traits will be built. A system that can detect and recognize a person's face with the help of a conventional web camera might be used. In order to facilitate future packaging of these detection algorithms in an easily portable framework across the many processor architectures found in modern machines (computers), this thesis aims to present a set of these methods. Less than 3% of the discovered faces must be false positives, meaning that these algorithms must yield at least a 95% successful recognition rate. Mejia and Torres (2018) have highlighted current advancements in the personnel selection process, including the utilization of artificial intelligence (AI)-driven AVIs. According to Brenner, Ortner, and Fay (2016), businesses can utilize AVIs to conduct an endless number of job candidates and automatically record their responses. This technology makes pre-hire interviews possible at wherever in the world and at any moment. Furthermore, according to Torres and Gregory (2018), AVIs give recruiters and companies the ability to quickly evaluate or pass over particular applicants.

II. LITERATURE REVIEW

Lee, B. C., & Kim, B. Y. (2021). Development of an AI-based interview system for remote hiring. *International Journal Advanced Research in Engineering and Technology (IJARET)*, 12(3), 654-663. In an effort to establish an interview system that ensures efficiency and fairness in the job interview market, applicant information services and interview help services based on big data and AI technology have recently expanded quickly throughout the world. Thus, based on deep learning technology, this work proposes an AI-based interview system that generated over 100,000 evaluation data sets from 400,000 interview picture data sets. Businesses have been using the resultant AI interview system, which has a 0.88 Pearson reliability score. This study presents the application of this method to five important public firms in Korea. As it turned out, up to 85% of respondents expressed satisfaction with efficiency and fairness in areas including job fitness, organizational fitness, and evaluation procedures.

Koechling, A., Wehner, M. C., & Warkocz, J. (2023). Affective responses to artificial intelligence in recruitment process. *Review of Managerial Science*, 17(6), 2109-2138. For cost and efficiency reasons, businesses are using algorithmic decision-making (ADM) and artificial intelligence (AI) more and more in their hiring and selecting processes. However, there are worries regarding how applicants will feel about AI systems used for recruitment, and little is known about how applicants will feel about the selection process itself—particularly when AI is used to support various stages of the selection process, such as preselection, telephone interviews, and video interviews. Based on the affective response model, we suggest that the links between an increasing AI-based selection process and organizational attractiveness are mediated by affective reactions (i.e., opportunity to perform, emotional creepiness). Specifically, we study whether and how AI-support during a full recruitment process lowers the opportunity to perform and raises emotional creepiness using a scenario-based between-subject design with German employees (N = 160).

Rezzani, A., Caputo, A., & Cortese, C. G. (2020). An analysis of the literature about application of Artificial Intelligence to the Recruitment and Personnel Selection. *Bollettino di Psicologia Applicata*, 25-33. The new frontier in human resource management is artificial intelligence (AI) applied to search and selection (R&S) processes. This has allowed for the velocization of some more mechanistic activities and the introduction of innovative methods such as large-scale data analysis and paralinguistic candidate characteristics. The contribution offers a reassessment of the literature on the introduction of artificial intelligence (IA) in R&S processes, taking into account pragmatic and etic factors, potential and constraints, as well as candidate perception and the effects on the company image.

Son, M., Lee, H., & Chang, H. (2019). Artificial intelligence-based business communication: Application for recruitment and selection. *Business Communication Research* 2(2), 84-92. With the advent of the Fourth Industrial Revolution, artificial intelligence (AI) has grown in importance. Hiring competent staff is one of the most crucial responsibilities in human resource (HR) management. In order to investigate how AI technology opens up new channels of communication in the recruiting process, this study looks at inAIR (AI for Recruiting), a novel recruitment integration solution.

Hunkenschroer, A. L., & Luetge, C. (2022). Ethics of AI-enabled recruiting selection: A review and research agenda. *Journal of Business Ethics*, 178(4), 977-1007. Artificial intelligence (AI) technology are being used by businesses more and more in their hiring and selection processes to expedite and improve efficiency. Applications of artificial intelligence (AI) can be found in many phases of the hiring process, including the creation of job advertisements, resume screening, and face recognition software analysis of video interviews. Since these new technologies have a big influence on people's lives and professions, but they also raise ethical questions, it's important to have a thorough understanding of the ethics of these AI applications. Nonetheless, the topic of AI applications in recruiting practices is still relatively new in academic literature, owing to its novelty. This paper thoroughly examines the body of research on the morality of AI-enabled recruiting to date in order to enhance and inform the groundwork for future investigations.

III .RESEARCH METHODOLOGY

Enforcing helmet-wearing laws and improving road safety through the use of cutting-edge technology is the objective of the proposed system. A user-friendly PyQt GUI facilitates seamless interaction, and advanced technologies such as OCR for object detection, and others are employed. Without using a helmet, the system seeks to identify riders, record their license plates, and automatically send out emails with challan fines. In order to ensure road safety, enforce helmet laws, and expedite the enforcement process, the system is a comprehensive and cutting-edge solution. Its benefits—which include scalability, data processing capabilities, real-time monitoring, instant accountability, and accuracy—make it an excellent instrument for encouraging safer driving and more efficient enforcement of regulations.

BENIFTS : Enhanced Road Safety, Real-Time Monitoring, Accuracy and Consistency.

IV. SYSTEMARCHITECTURE

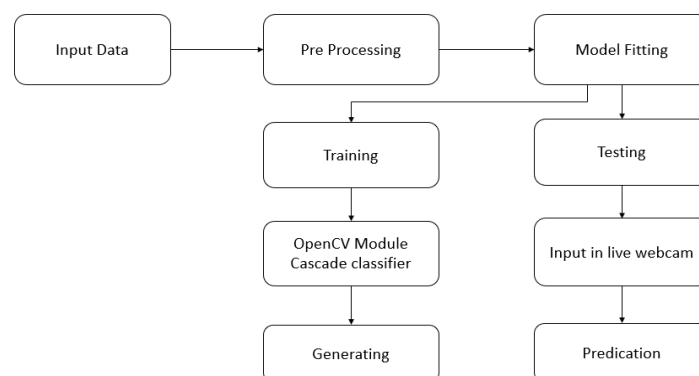


FIG1: SYSTEM ARCHITECTURE

Algorithms and frameworks for AI. To evaluate candidates' analytical and solution-proposal skills, real-world scenarios are given to them. Additionally, code tests determine how proficient they are at programming, especially in languages related to AI and system architecture. The candidate's capacity to express complicated concepts intelligibly and participate in insightful conversations is how their communication abilities are evaluated. Additionally, evaluating motivation and cultural fit guarantees congruence with the company's values and objectives. The selection of candidates with the greatest potential for success is made easier with the help of interviewers' feedback. Interview procedures are continuously improved to guarantee that the organization's best talent is found for roles involving AI and system architecture.

V. MODULES

A. Datasets

B. Pre-Processing

C. Segmentation

D. Recognize Expression

A.DATASETS

Datasets are collections of data. Let's examine: the network is evaluated using five well-known benchmark databases. The seven fundamental universal face expressions—NE, AN, DI, FE, HA, SA, and SU—can be discovered in several datasets. Here, input data in image format can be gathered to determine the system's recognition and facial expression. The Face image format is suitable for obtain an input image. .

B.PREPROCESSING

One method for lowering noise in the system's picture format is pre-processing. While scaling modifies the data's boundaries, smoothing and defriending are methods for eliminating noise and linear trends from data. The procedures of grouping and binning help to determine the links between the data variables. Retinal images used for mass screening may differ in terms of contrast, lighting, and resolution. Establishing a standard for these variables allows for the promotion of deep learning. This is how the photo preprocessing is used in this instance. Initially, the retinal pictures are all adjusted to have the same radius for the FOV. To obtain an image size that is similar to that utilized in, we set the radius size to 384 pixels. A method for increasing contrast and equalizing illumination is applied. Here, the Gaussian filter makes use of a preprocessing approach..

C.SEGMENTATION

The division of an image is called segmentation with similar features into distinct regions that contain each pixel. To be relevant and useful for the evaluation and interpretation of the picture, the areas must have a strong connection to the items or qualities of interest that are shown. The initial stage of low-level image processing to convert a grayscale or color Significant segmentation is the process of breaking down a picture into a number of additional photos and subsequently into a basic overview of features, items, and scenes. Dependability of division is essential for successful image analysis, yet accurate picture partitioning is typically a highly challenging problem.

D.RECOGNIZE EXPRESSION

Classification is a process that is associated with categorization, which is the procedure for identifying, differentiating, and comprehending concepts and objects within a system. The term "classification" refers to both the process of classifying—that is, dividing and dividing various "things" into distinct groups—as well as the final collection of classes that are created when pieces are assigned to pre-existing classes. In the broad sense described above, classification is a basic idea, a component of nearly every activity, and an interdisciplinary area of study. The fields of philosophy, biology, knowledge organization, psychology, statistics, and mathematics are among the most significant contributors. The system's network can be trained using a categorization procedure. Here, trained DCNN able can be applied to obtain a classification strategy.

VI.ALGORITHM

A.DECISION TREE (DT)

The decision tree is regarded as among the most well-liked and successful algorithms for future prediction and categorization. The data is split recursively until it reaches the leaf, which is typically one of the class labels, in the DT model, which is similar to a conceptual tree. Each internal node in the model represents a feature that best splits the data into subsets using statistical measures like information gain and gain ration. DT is a supervised learning algorithm in machine learning. The feature variable has seven options—six of which are pollutant factors, and the seventh is marked "No pollution"—all of which are consistent with the study's objective of determining which of the six pollution factors has the greatest influence or the pollution."

B.SUPPORT VECTOR MACHINE (SVM)

One popular machine learning approach for classification and prediction is called Support Vector Machine (SVM). By creating a nonprobabilistic binary linear classifier, SVM assigns each occurrence to a specific target class. The midway point between each cluster will be used as the threshold by the model, which will then assign each new instance based on how far it is from the threshold. TheThe space between the edges is known as the margin of clustered instances and the threshold[13– 18]. The dataset that was used was standard SVM data. Using orange software, the accuracy was 99.837% in this case.

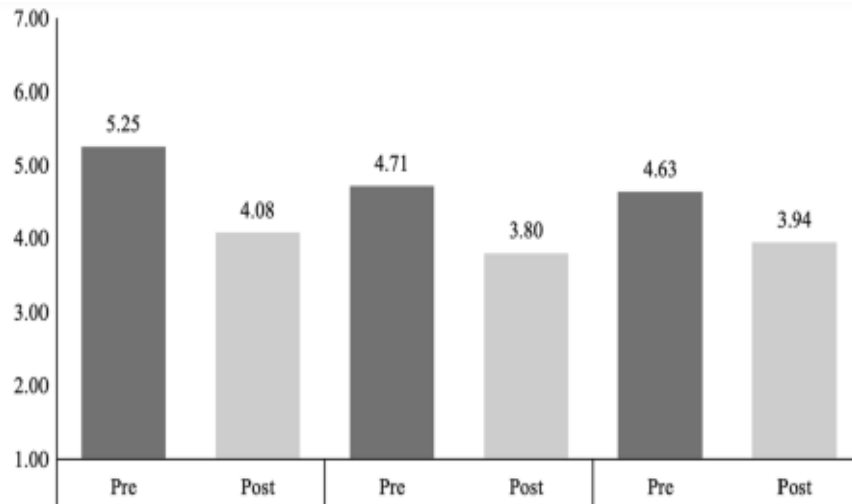
C .RANDOM FORESTS

Among the most popular machine learning methods for regression and classification problems is Random Forest (RF). In order to improve forecast accuracy, RF builds a series of decision trees known as forest trees. Constructing an RF tree is comparable to a decision tree (DT) that employs additional metrics or information gain. RF is utilized over DT because of its capacity to manage missing data and address the overheating issue. Since RF is a collection of DTs, Every tree yields a distinct output, and RF will select the majority output generated by DTs or the mean in the case of a regression problem [15]. With this type, accuracy 99.714%.

D .LOGISTIC REGRESSION

A well-liked statistical machine learning approach for classification issues is logistic regression; nonlinear functions like the sigmoid and logit functions are used to predict the output[16]. This type produced an accuracy of 91.598 %.

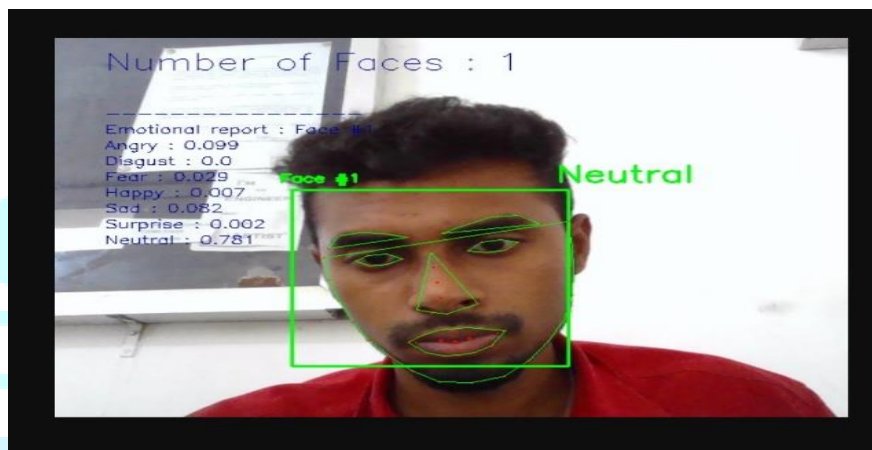
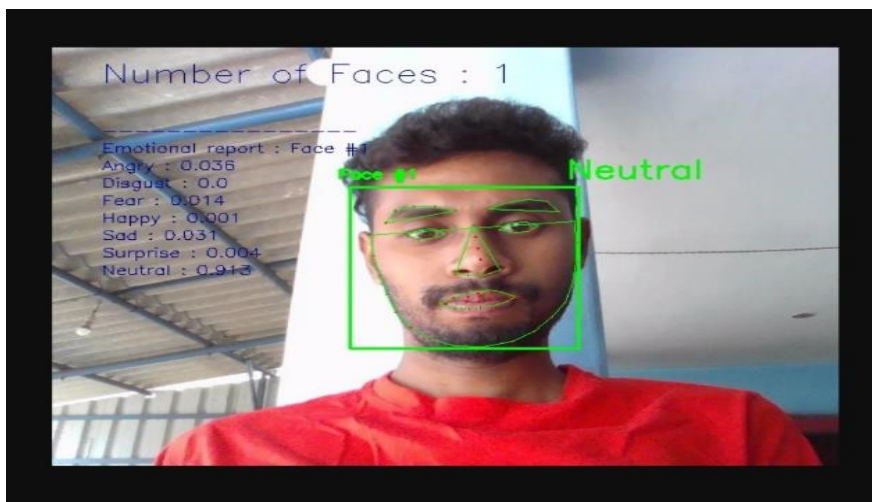
VII.RESULTS



design. To determine if the differences in the three variables' means were significant, we employed paired sample t-tests. Initially, we discovered a significant difference [$t(39)=4.62, p<0.01$] in the procedural justice between before and after the newspaper story ($M = 5.25, SD = 1.31$) ($M = 4.08, SD = 1.50$). Second, trust differed significantly [$t(39)=4.36, p<0.01$] before and after the newspaper item ($M = 4.71, SD = 1.14$) and $M = 3.80, SD = 1.31$).

Class	Precision	Recall	F1-SCORE
Angry	0.51	0.56	0.53
Disgust	0.76	0.52	0.62
Fear	0.49	0.42	0.45
Happy	0.83	0.84	0.83
Sad	0.50	0.54	0.52
Surprise	0.77	0.80	0.79
Neutral	0.57	0.54	0.55

Third, we also discovered a significant difference in organizational attractiveness between before and after the newspaper article ($M = 4.63, SD = 1.08$) and ($M = 3.94, SD = 1.21$) [$t(39)=4.89, p<0.01$].



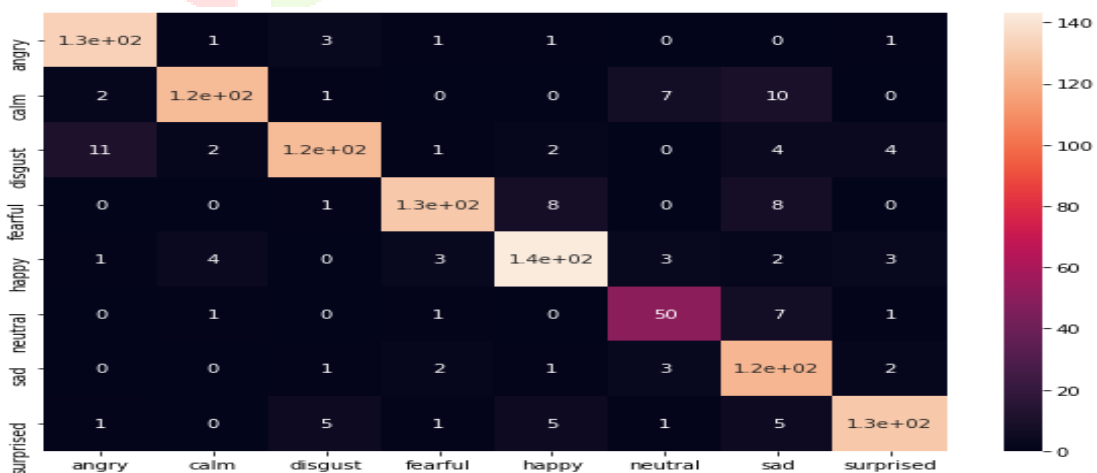
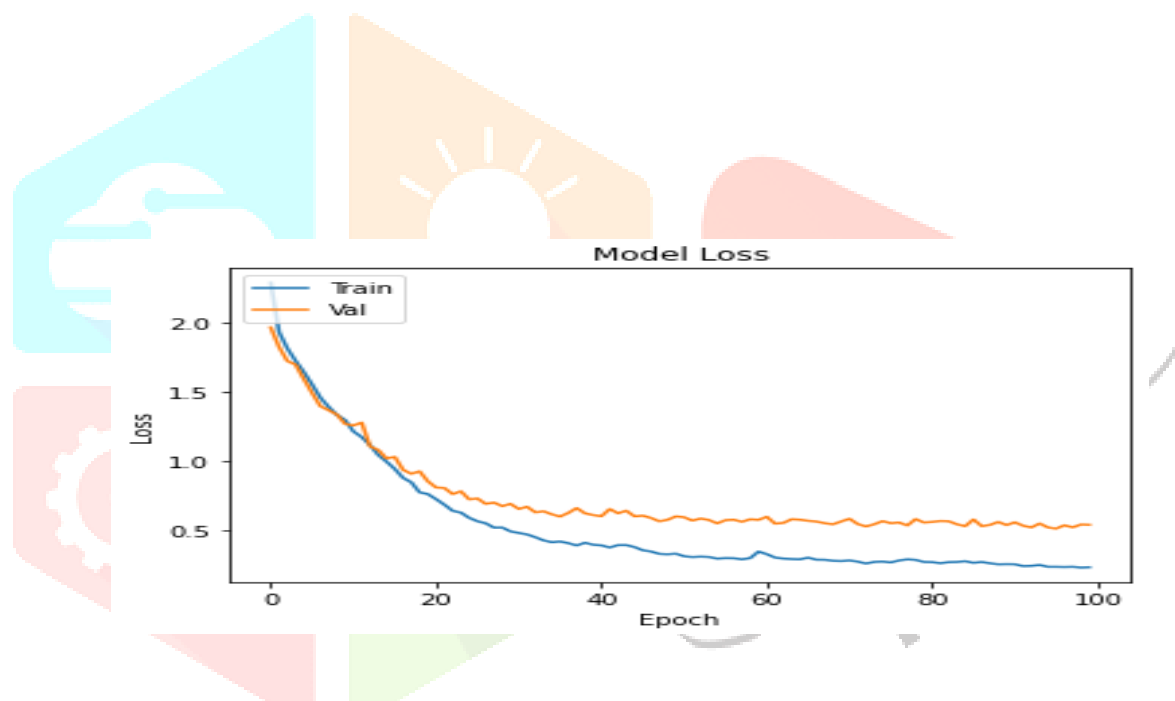
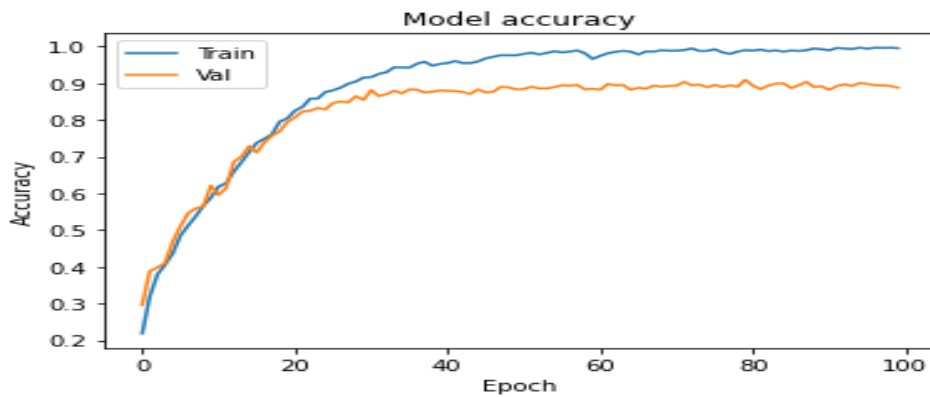
VIII. FUTURE DISCUSSION

We see a big change in how companies evaluate and hire talent in the future using AI interview analytics for applicant selection. Artificial intelligence (AI) advancements, such as advanced natural language processing and emotion identification, will transform the interview process by providing deeper insights into candidate responses and non-verbal cues. Even while these advances offer greater productivity and less bias, privacy, fairness, and transparency ethics must continue to be at the forefront of development. To properly manage these obstacles and guarantee that AI-driven applicant screening procedures are not only efficient but also morally and just, cooperation between AI systems and human recruiters will be crucial."

IX. CONCLUSION

The purpose of this research was to increase awareness of the potential negative emotional reaction to AI support during various phases of the hiring and selection process. This study looks at which stages of the selection process candidates accept AI support, provided that humans make the ultimate decision. Research on applicants' acceptance of AI tools in The selection procedure is still in place in its early stages. Take more pictures of each subject, preferably from various perspectives and in varying lighting situations, and you can typically increase the facial recognition accuracy by using more input images—at least 50 per individual. If taking additional pictures is not an option, you can still generate new images from your current

ones using a few easy approaches to gain more training images: To be sure you've twice as many training images and that they are impartial toward the left or right, you might make mirror duplicates of your face photos.



X. REFERENCES

- [1] AlphaGo. (2016). The story of AlphaGo so far. Retrieved from <https://deepmind.com/research/alphago>.
- [2] Lee, B. C., & Kim, B. Y. (2021). Development of an AI-based interview system for remote hiring. *International Journal Advanced Research in Engineering and Technology (IJARET)*, 12(3), 654-663.
- [3] Koechling, A., Wehner, M. C., & Warkocz, J. (2023). Can I show my skills? Affective responses to artificial intelligence recruitment process. *Review of Managerial Science*, 17(6), 2109-2138.
- [4] Rezzani, A., Caputo, A., & Cortese, C. G. (2020). An analysis of literature about the application of Artificial Intelligence to the Recruitment and Personnel Selection. *Bollettino di Psicologia Applicata*, 25-33.
- [5] Son, M., Lee, H., & Chang, H. (2019). Artificial intelligence-based business communication: Application for recruitment and selection. *Business Communication Research and Practice*, 2(2), 84-92.
- [6] Hunkenschroer, A. L., & Luetge, C. (2022). Ethics of AI-enabled recruiting and selection. *Journal of Business Ethics*, 178(4), 977-1007.
- [7] Brooks, R. A. (1991). Intelligence without representation. *Artificial intelligence*.
- [8] Chui, M., & Francisco, S. . Artificial intelligence next digital frontier?. McKinsey and Company Global Institute, 1- 80.
- [9] Denise, D. Machine learning helps large companies hire better, potentially cutting turnover. Retrieved from <https://business.financialpost.com/entrepreneur/0508-biz-dd-hr> .
- [10] Dom. N.: Artificial intelligence is redefining human resources in seven ways. taken from the webpage <https://www.cmswire.com/digital-workplace/7-ways-artificial-intelligence-is-reinventing-human-resources/>.
- [11] Eric, B., Chltra D., Sheri F., Ngel G., & Eric L. How cognitive computing is transforming HR and the employee experience. (March 2017).
- [12] Ertel, W. . Introduction to artificial intelligence. New York, MA: Springer International Publishing.
- [13] Henderson, R. I.; Payroll administration in a knowledge-driven society (10th ed.). Boston, New Jersey: Prentice Hall.
- [14] Holland, J. H. . Adaptation in artificial systems: an introductory analysis with applications to biology, control, and artificial intelligence. Cambridge, MA: MIT Press.
- [15] Hutson, M. Artificial intelligence has the ability to create biases against ethnicity and gender. derived from even artificially intelligent systems develop biases regarding gender and race.
- [16] IBM Watson talent frameworks. Retrieved from: <https://www.ibm.com/talentmanagement/hr-solutions/ibmwatson-talent-frameworks>.
- [17] Jain, A. K., & Li, S. Z. (2011). Handbook of face recognition. New York, MA: Springer.
- [18] Langer, M., Baum, K., König, C. J., Hähne, V., Oster, D., & Speith, T. (2021). Spare me the details: How the type of information about automated interviews influences applicant reactions. 29(2), 154-169.
- [19] Tippins, N. T., Oswald, F. L., & McPhail, S. M. (2021). Scientific, legal, and ethical concerns about AI-based personnel selection tools: a call to action. 7(2), 1.
- [20] Uma, V. R., Velchamy, I., & Upadhyay, D. (2023). Recruitment analytics: hiring in the era of artificial intelligence. Part A (pp. 155-174). Emerald Publishing Limited.