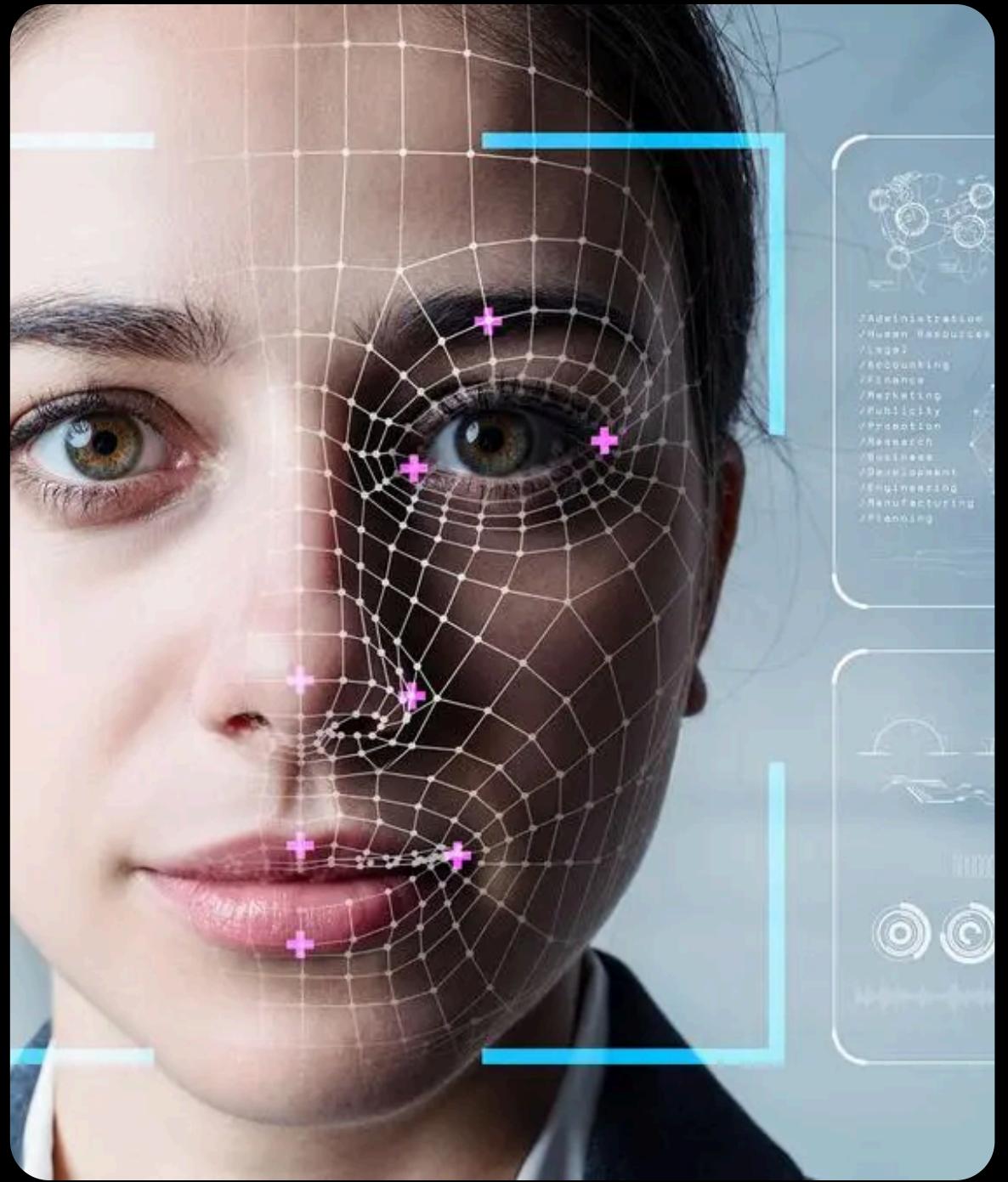


DEEPMODEL DETECTION FOR DIGITAL RIGHTS & EQUALITY

GNEC Hackathon - SDG5 & SDG10

Get Started





What is Deepfake?

Deepfake refers to artificial intelligence-generated manipulated media that closely resembles real images and videos. While it can be used for creative purposes in entertainment, it also poses significant risks such as misinformation, identity fraud, and political manipulation.

Statistics:

- "By 2024, over 90% of online content may be AI-generated." (Source: Gartner)
- "Fake news spreads six times faster than real news on social media." (Source: MIT)

Social, Economic & Political Impact

Social Impact:

- Can erode public trust and create social polarization.
- False content can damage individual and group reputations.
- Deepfake can violate privacy rights by using people's images without consent.

Economic Impact:

- Companies can fall victim to fraud due to deepfake.
- Fake content may be used to manipulate the advertising and media industries.
- Digital misinformation costs the global economy \$78 billion annually. (Source: WEF)

Political Impact:

- Fake images of political figures can mislead public perception.
- Deepfake in election campaigns can disrupt democratic processes.
- Digital disinformation may cause crises in international relations.



Alignment with SDG 5 & SDG 10

Deepfake technology is often used to manipulate women and marginalized groups, leading to reputational harm and misinformation. Our project helps identify and prevent digital exploitation, promoting fairness and transparency.

- **SDG 5:** Reduces digital harassment risks, protecting individuals from manipulated content.
- **SDG 10:** Prevents misinformation, fostering a more equitable digital space.

Social Contribution

- Safeguards individuals from misleading and harmful content
- Strengthens ethical AI use to support justice and equality
- Raises awareness about the risks of manipulated media

Key Facts

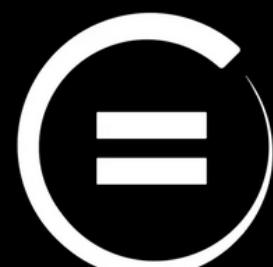
96% of deepfake content involves gender-based manipulation (Deeptrace)

Fake content targeting women spreads **7x** faster than real content (MIT)

5 GENDER EQUALITY



10 REDUCED INEQUALITIES



How Does the Web Application Analyze Deepfake Content?

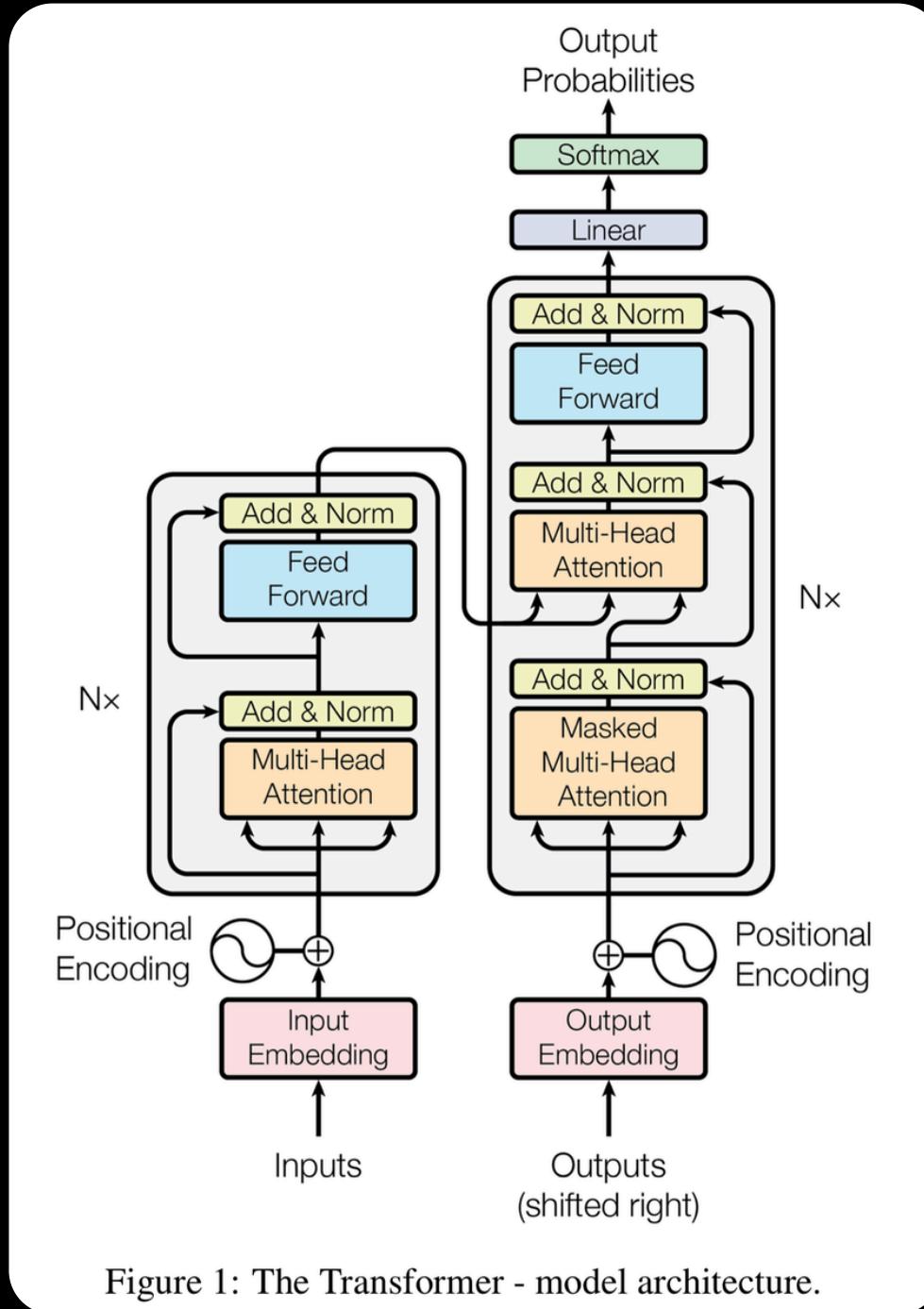
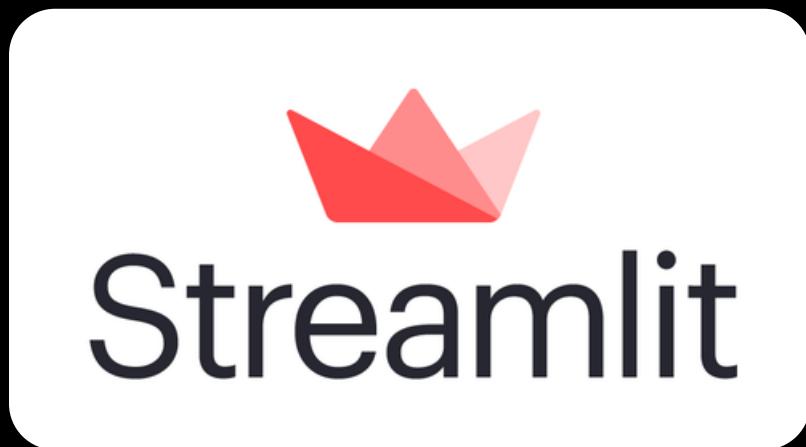
An AI-powered web app that, upon image upload, detects faces/objects, scans for pixel anomalies, and delivers a concise authenticity report.

Statistics:

- "The accuracy rate of deepfake detection algorithms has increased by 30% in the past five years." (Source: AI Research Journal)
- "Global economic losses due to digital fraud are expected to exceed \$150 billion by 2025." (Source: World Economic Forum)



Technology Used

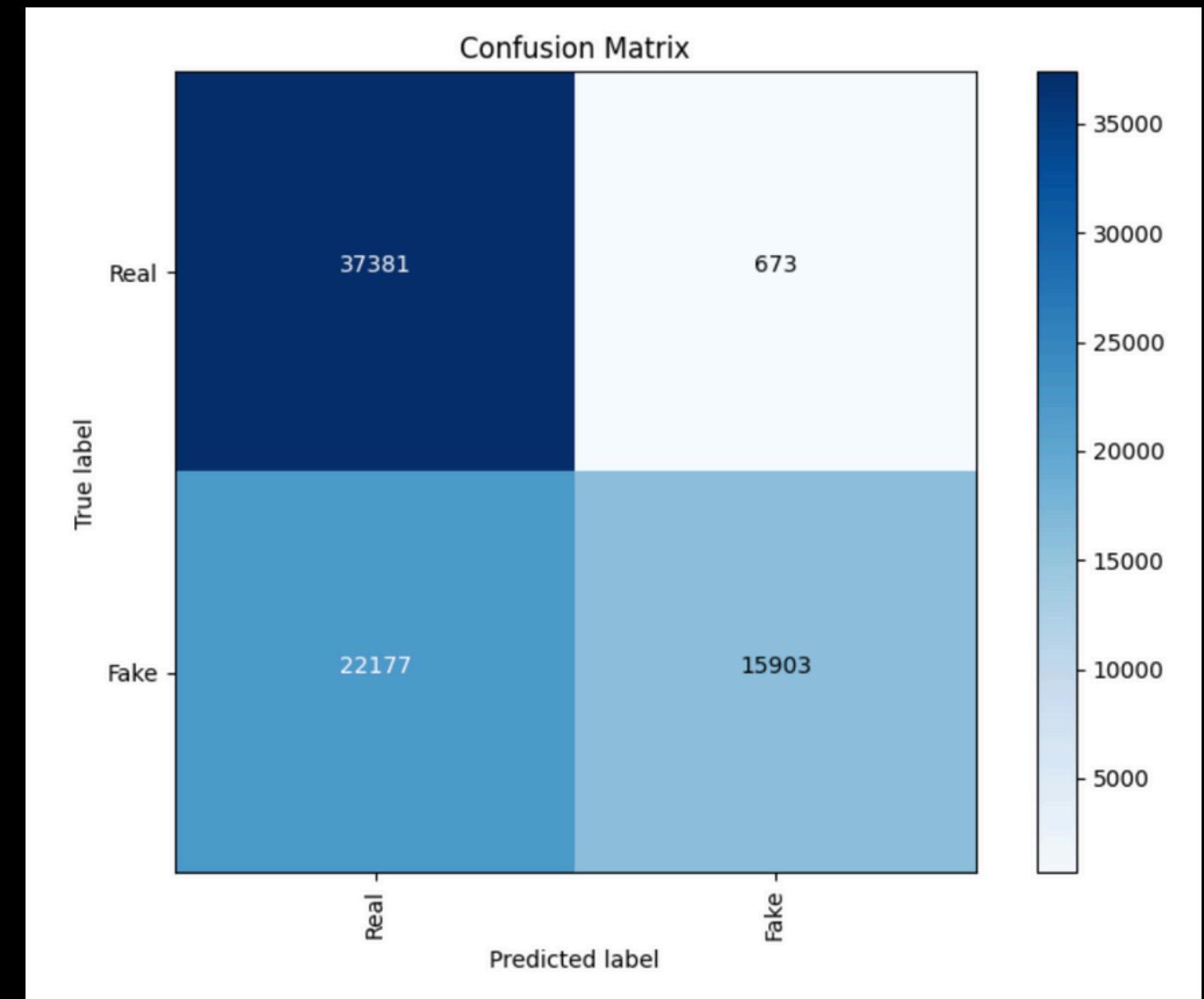


- **Tech Stack:** Python, Streamlit, Transformers
- **Purpose:** Fast, accurate deepfake analysis
- **AI Model:**
 - 1.ResNet & CNN – Image recognition & fake-content detection
 - 2.Transformers – Pixel-level anomaly detection
 - 3.LSTM + Attention – Temporal change analysis
- Statistic: Transformer-based detection is 45% more accurate than traditional methods.
- **Visuals:**
 - Model architecture diagram
 - AI process flow graphics

Model Performance Metrics

The model excels at spotting genuine images—correctly identifying about 98% of reals with few false alarms—but is much less effective at catching fakes, flagging only ~42% of manipulated samples (even though its fake-predictions are highly precise). This imbalance yields a solid overall accuracy (~70%) but lets through over 22K undetected fakes. Adjusting the decision threshold or re-weighting the classes could raise fake recall and produce a more balanced, reliable deepfake detector.

Classification report:				
	precision	recall	f1-score	support
Real	0.6276	0.9823	0.7659	38054
Fake	0.9594	0.4176	0.5819	38080
accuracy			0.6999	76134
macro avg	0.7935	0.7000	0.6739	76134
weighted avg	0.7936	0.6999	0.6739	76134

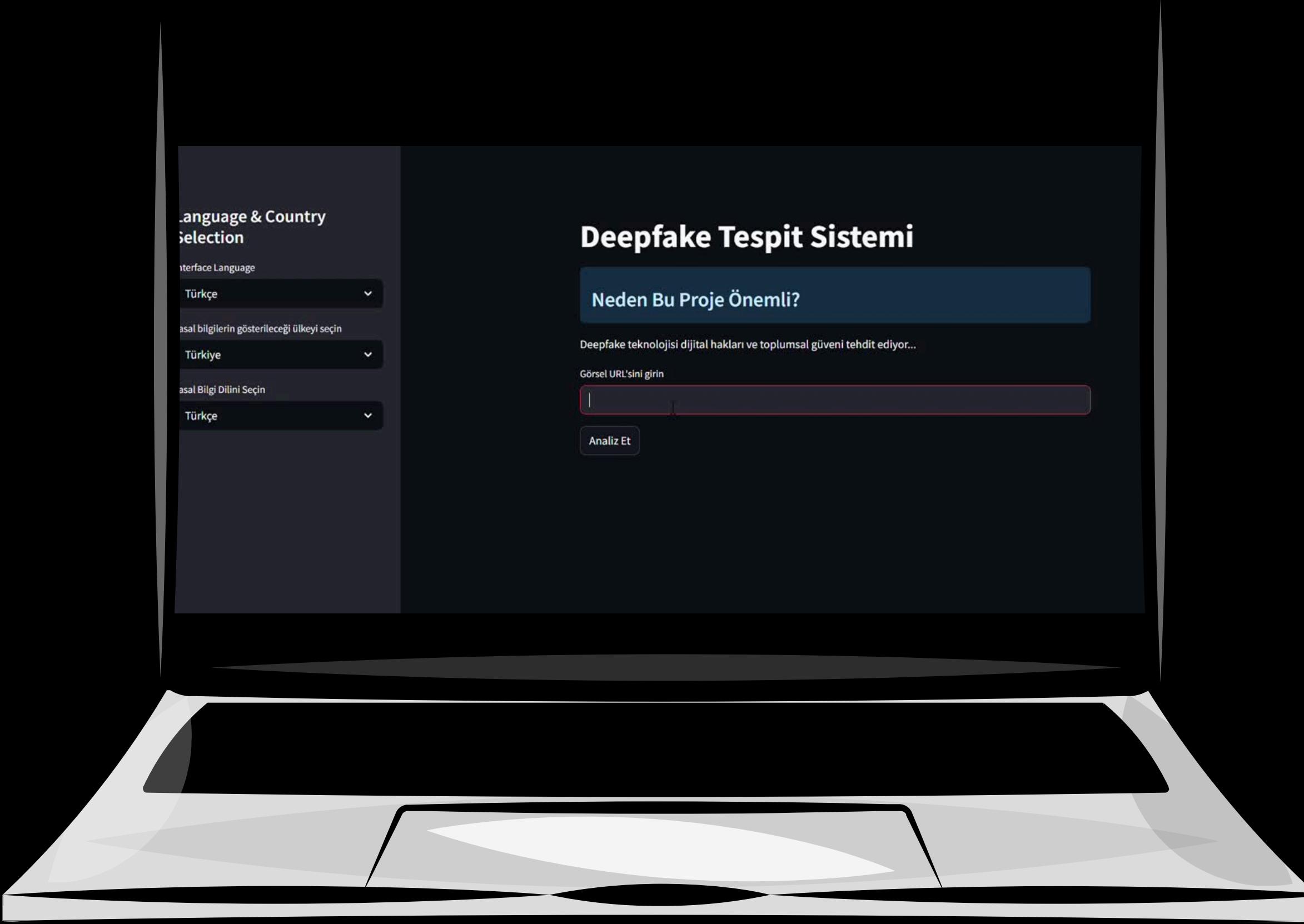


Deepfake Analysis Process

Our AI-powered system processes images through several key steps to detect manipulations:

- Face & Object Recognition: AI scans images to identify key features.
- Anomaly Detection: Pixel structures are analyzed for inconsistencies.
- Authenticity Report: A detailed report is generated, scoring the likelihood of deepfake manipulation.





<https://github.com/dogaulku/Deepfake>

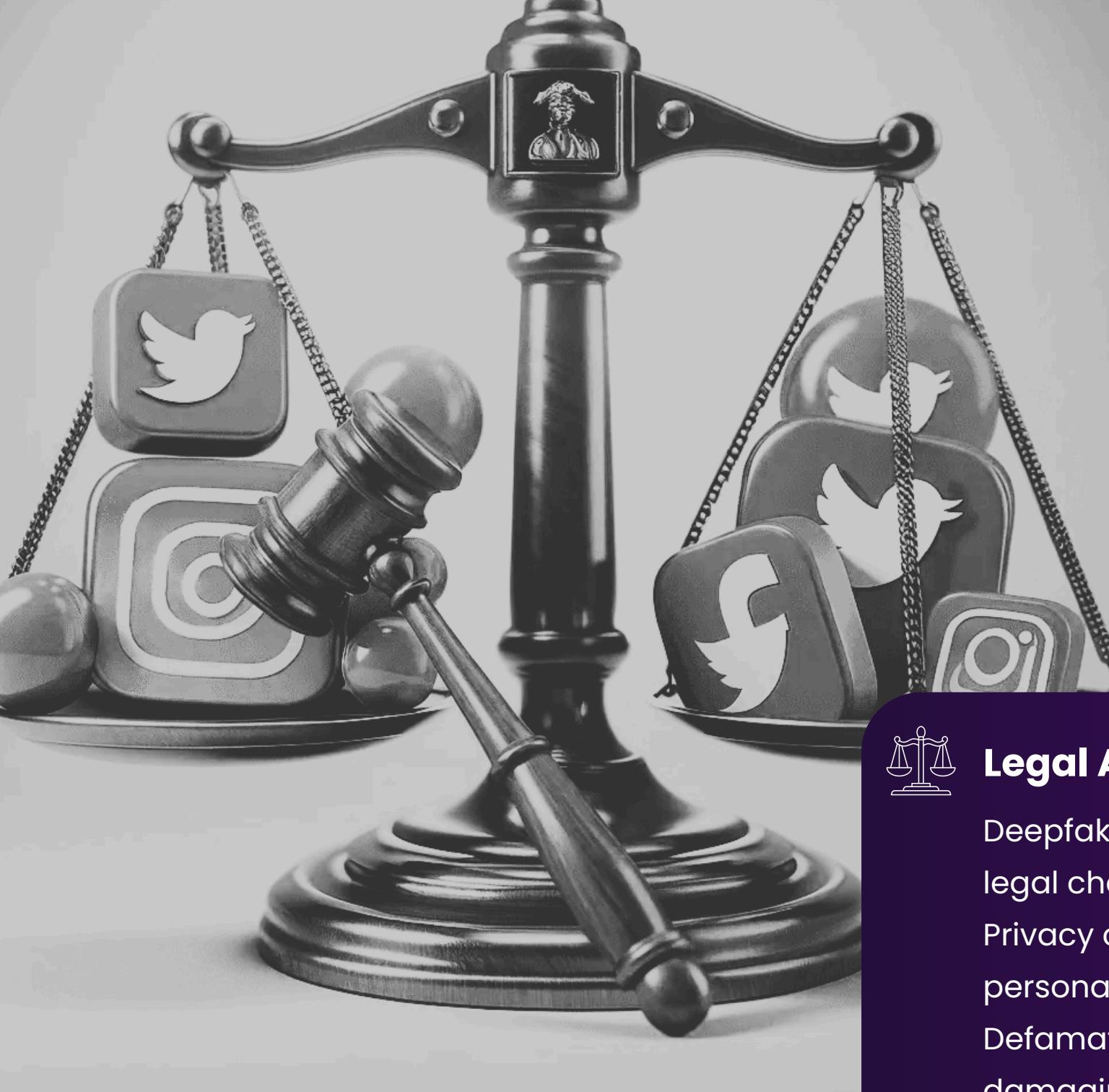
AI & Ethics – Supporting Responsible AI Use

Artificial intelligence plays a critical role in shaping the future of digital interactions, but its ethical implications must be addressed. Responsible AI use focuses on:

- Transparency & Accountability: AI-generated content should be traceable and identifiable.
- Fairness & Bias Prevention: Ensuring algorithms do not reinforce discrimination or misinformation.
- Privacy & Security: Protecting user data from unauthorized manipulation.

Ethical AI safeguards public trust, enhances security, and supports fairness in digital media.





Legal Aspects, Digital Rights & Social Awareness



Legal Aspects, Digital Rights

Deepfake technology presents serious legal challenges and societal risks:

- Privacy concerns: Unauthorized use of personal content.
- Defamation risks: Manipulated media damaging reputations.
- Regulations: Efforts worldwide to curb AI-generated misinformation.
- Governments & tech industries are working to implement stronger policies against deceptive AI content.



Social Awareness

Meanwhile, deepfake detection plays a crucial role in protecting digital integrity:

- Shields public figures & organizations from fake content.
- Ensures media authenticity, preventing misinformation.
- Supports cybersecurity in fraud detection & risk prevention.

Social Awareness & Education

Raising awareness about deepfake risks is crucial to prevent misinformation and protect digital rights. Our project aims to:

- Educate users on how to identify deepfake content
- Support media literacy to promote critical thinking
- Advocate for stronger regulations against harmful AI-generated content



Real-World Applications

Deepfake detection is essential in various industries:

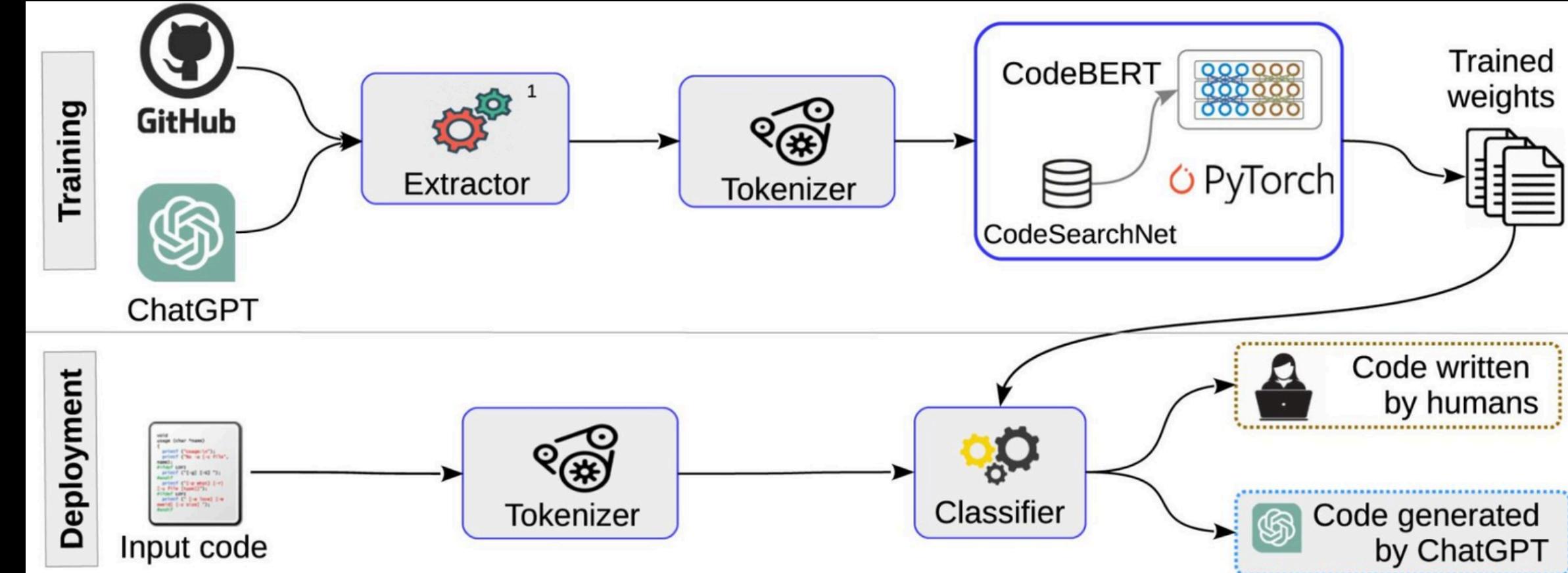
- Legal Sector: Identifying manipulated content in court cases
- Journalism: Ensuring media authenticity
- Cybersecurity: Preventing AI-driven fraud



Scalability & Adaptability

This project is highly scalable, with features adaptable to:

- Different languages and legal frameworks
- Integration with media verification platforms
- Corporate security systems



Impact & Benefits – Strengthening Digital Security



Our deepfake detection system enhances digital security by:

- Preventing misinformation and protecting public trust.
- Detecting manipulated media to safeguard individuals and organizations.
- Supporting ethical AI use in legal and corporate environments.

Key Statistics:

- "AI-powered misinformation detection reduces fake news spread by 60%." (Source: AI Ethics Journal)
- "Digital fraud costs businesses over \$150 billion annually." (Source: World Economic Forum)

Future Plans



As deepfake technology advances, our project aims to expand capabilities by:

- Developing AI-powered video analysis for detecting manipulations beyond images.
- Integrating real-time detection systems for instant verification.
- Enhancing model accuracy using adaptive machine learning techniques.

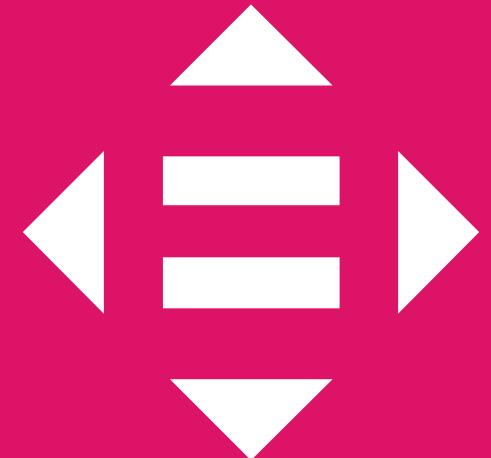
Conclusion & Summary – Key Takeaways

Our deepfake detection solution is a critical step toward a secure digital future, focusing on:

- Strengthening online authenticity & trust.
- Leveraging AI for ethical media verification.
- Empowering individuals against digital misinformation.

Join us in creating a safer and more transparent digital world!

**10 REDUCED
INEQUALITIES**





Our Best Team



Doğa ÜLKÜ



Sultan SARIZEYBEK



Selay SATICI