

iPAS AI ??????

- [????](#)
- [????](#)

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??????

- ?????

- ?????
 1. ???? (Confusion Matrix)
 2. ??? / ??? / ???
 3. F1-score
 4. ROC ?? / AUC ?
- ?????
 - ???? (MSE)
 - ?????? (MAE)
 - R ?? (R-Squared Score)

??? AI ??????

??? AI ???????

- ????????

1. ISO 27001 ??????
2. ISO 42001 ??????
3. ISO 27701 ??????

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□ (□) □□	□□
???? (Artificial Intelligence)	Marvin Minsky: AI ?????????????????????? ???AI?: AI ??????????????????
???? (Generalization Ability)	????????????????????????????
??? (Hyperparameter)	?? ????????????
????? (Transfer Learning)	???????? AI ?? ????????????????????????????
?? (Hallucination)	???????????????? (?: ?????????) ?? ????????????????
???? (Model Distillation)	?? ????????????????????
TTQA (??????????)	?? AI ???

??? vs ??

- ?????????????????????????
- ?????????????????????????????

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????????????? $f(x) = ax + b = y$

- ?? x ????????????????
- ?? a, b ????????
- ?? y ????????????????...

??? vs ??? vs ???

- ?????????AI ??
- ??????AI ???
- ?????????AI ?????????????????

?? (Feature) vs ?? (Label)

??

2. **??? (Bar Chart)**????????????????
3. **???Scatter plot**????????????????????????????????x????????y
 ?????????????????????????????????

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3. **???Radar chart?**
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 ??????

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4. **??? (Box chart)**????????????????????????
5. **??? (Line Chart)**????????????????????
6. **??? (Pi Chart)**???????????????? 100% ??????

????

????Quartile????????????????????????????????25%????????

- ?????Q1????25%??
- ?????Q2????50%???
- ?????Q3????25%??
- ?????IQR??Q3 - Q1????

????????????????????????????????Q1 = 60?Q2 = 70?Q3 = 80?IQR = 20
 ?????70??25%???60??25%???80??????20?

???? (IQR) ??

- ?????
- ?????
- ??? 50% ?????

????

??? Q1?Q2 ? Q3????

1. ?????80, 85, 85, 90, 95, 95, 100, 100
2. ?????
 - ????? (Q1) ????? 25% ????

- ????? (Q2) ????? 50% ?????
 - ????? (Q3) ????? 75% ???? ?
3. ????? 9 ?????
- 25% ?? = $(9 + 1) * 0.25 = 2.5$???? Q1 ?? 3 ?
 - 50% ?? = $(9 + 1) * 0.5 = 5$??? Q2 ?? 5 ?
 - 75% ?? = $(9 + 1) * 0.75 = 7.5$???? Q3 ?? 7 ?
4. ?????
- Q1 = ? 3 ?? = 85
 - Q2 = ? 5 ?? = 90
 - Q3 = ? 8 ?? = 100

???Q1 = 85?Q2 = 90?Q3 = 95?

???? (IQR) = Q3 - Q1 = 95 - 85 = 10

DALL-E vs Midjourney

DALL-E ? Midjourney ?????

DALL-E

- DALL-E ?????VAE??_transformer ?????
- ?????
- DALL-E ?????
- DALL-E ?????

Midjourney

- Midjourney ?????GAN??_diffusion ?????
- ?????
- Midjourney ????? DALL-E ?????
- Midjourney ?????

??

- ?????DALL-E ? Midjourney ????? DALL-E ?????
- ?????Midjourney ? DALL-E ?????
- ?????DALL-E ? Midjourney ????? DALL-E ?????
- ?????DALL-E ?????Midjourney
????

???DALL-E ? Midjourney ?????

BERT (Transformer)

BERT (Transformer) ??????

1. ??Transformer???BERT ???Transformer????????????Self-Attention
???????????? BERT ?????????????????????
2. ???BERT ?????????????????????????????????????Masked
Language Modeling????????Next Sentence Prediction??
3. ?????????????BERT ?????????????????????????????????

?????

1. ?????BERT ?????????????????????
2. ?????BERT ?????????????????????
3. ?????BERT ?????????????????????
4. ?????BERT ?????????????????????

BERT ????????????????????????????????? NLP ????????

GPT vs BERT

GPT is one directional while BERT is bidirectional. You use GPT to predict the next token GIVEN the previous context, while you use BERT to predict the token in between GIVEN the token of both previous and future context. So you use GPT for **text generation** while you use BERT for **text classification** (understanding text). In terms of architecture, GPT is **transformer-decoder** only while BERT is **transformer-encoder** only.

???/???/???/???

??????

- $FP(??) / TP(??) / ??(FN) / ??(TN)$
- Accuracy????????????????????
 - $?? = (TP+TN) / ???$
- Precision????????????????FP????
 - $?? = TP / (TP+FP)$
- Recall-TPR????????????FN????
 - $?? = TP / (TP+FN)$
- Error????
 - $?? = (FP+FN) / ??$
 - $?? = 1 - ??$
- (FPR)?FP / (FP+TN)
- F1 Score?Precision ? Recall ?????????????
- ROC ?????????????(????)????????(????-???)
????????????
- AUC??ROC????0.5????????????AUC????1
????????AUC??0.7????????0.8????????0.9????

????????????

- ?????????
- ?????????
- ?????????????
- ?????????????

???? / MSE / MAE

???????

Loss Function

[illegible]

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- ???????
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- ??????? ???
?????Gradient Descent??????????????

[illegible]

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????????????????

1. **????** (Mean Squared Error, MSE)
 - **???** ?????????????????????????????????
 - **???** ???
 - **???** ?????????????????????????????
2. **???** (Cross-Entropy)
 - **???** ?????????????????????
 - **???** ???one-hot
????????????????
 - **???** ?????????????????????????????
3. **??????** (Mean Absolute Error, MAE)
 - **???** ?????????
 - **???**
??
 - **???** ??? MSE?MAE ??????Outliers????????????????
4. **????** (R-Square)????????????????????????0 ?1?????1????????????())

??? (Learning Rate)

??? (Learning Rate) ?????????????? ???
??

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- ????? ? ???“?”????????????????????
- ????? ? ?????????????????????????

????????????

1. ????????????? 10 ~ 100 ???
2. ?? Adam / AdamW ????????????????????????????? 1e3?
3. ????????????????? 1/10–1/100 ?????????????

???

- ??? ?????????????????????????
- ?????????????
- ?? ?????????????????????
- ?????????????????????????????????

LLM ????(Benchmark)

- [\[Day18\]???????? LLM???? LLM ??? Benchmark ? Leaderboard - iT ???::
???????? IT ????](#)

????	??	?????	??????
MMLU	???	?? 57 ???????????????????? ???????????	???????????????
HellaSwag	???	???????????????? ???????????????? ??	????????????????
ARC	???	???????????????? ????????????????	????????????????
HumanEval	???	????????? ????????????????	????????????????
GSM8K	???	???????????????? ????????????	????????????????
AlpacaEval	???	????????? LLM?? GPT-4 ????????????????	????????????????

???? (Federated Learning)

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????????????????????IoT

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????????????????????

?????AI

[illegible][illegible]

Siri/Google Gemini App ????????

[illegible]

????????????????

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- [illegible]

Temperature/Top-P/Top-K

- Temperature (????): ?????????0.0 ~ 2.0????????????????????????????????
- Top-P (????): ?? Temperature????????????0.0 ~ 1.0???? Temperature
????????????????????
- Top-K: ?????????????????????????????????-100 ~ 100
????????????????????????????????

???? (Cross-Validation)

????????Machine Learning????????Training
Data????Overfitting????

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- ?????????????????????? (?????????) ??????????????????????
- ???
- ???
- ???

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???? (Reinforcement Learning)

DeepSeek ??????????????????????GRPO ? DeepSeek ?????????????????????? RL
???????????????????????? PPO (Proximal Policy Optimization) ???GRPO ?????????? (Critic
Model)??

- ?????
 - ?????
 - ?? RL ???
 - GRPO ???
 - ?????
 - GRPO ?????????????????????????
 - ??? (Coherence)? ?????????
 - ??? (Completeness)? ?????????
 - ??? (Fluency)? ?????????
????????????????????????
 - ?????
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- ?????
 - ?????????????GRPO
??

GRPO ???

- ??????? ?????????????????????? OpenAI o1 ????????
- ?????????? ??????????????????????
- ???????? ??????????????????????

GDPR

?????????????(GDPR) ? AI ????

- ????????????????
- ????????????????
- ???????????????
- ?? AI ??????????
- ??? AI ??????

??? (Overfitting)

??? (Overfitting)	??? (Underfitting)
?????????????	?????
• ??? (L1/L2) • Dropout (????????) • Early Stopping (???) • Data Augmentation (????)	• ?????? • ????? • ???????? • ???????

??? vs ???

??????????????

?????

- ??????? 0 ~ 1 ??
- ??????????(? cm ? kg)????????????????????(KNN)

?????

- ????????????? 0?????? 1 ???