PaperRobot: Incremental Draft Generation of Scientific Ideas

Qingyun Wang[1], **Lifu Huang**[1], **Zhiying Jiang**[1],
Kevin Knight[2], **Heng Ji**[1,3], **Mohit Bansal**[4], **Yi Luan**[5],
[1] Rensselaer Polytechnic Institute [2] DiDi Labs [3] University of Illinois at Urbana-Champaign
[4] University of North Carolina at Chapel Hill [5] University of Washington
kevinknight@didiglobal.com, hengji@illinois.edu

A Hyperparameters

Table 1 shows the hyperparameters of our model.

Models	Parameter	Value
Link Prediction	# Multi-head	8
	Multi-head hidden	8
	Entity embedding	64
	LeakyReLU α	0.2
	Margin loss γ	1
Paper Writing	Decoder hidden	256
	Coverage loss λ	1
Both	Vocabulary size	32553
	Text embedding	128
	Optimization	Adam (Hu et al., 2009)
	Learning rate	0.001

Table 1: Hyperparameters

B Language model details

The perplexity scores of the language model are 96.24, 59.69, and 120.31 on titles, abstracts, and conclusions respectively.

C Good Examples that Passed Turing Test

System Output	Human Output
Efficacy and Safety of Artesunate in the Treatment of Uncomplicated Malaria: a Systematic Review and Meta-analysis.	Low RBM3 Protein Expression Correlates with Clinical Stage, PrognOStic Classification and Increased Risk of Treatment Failure in Testicular Non-Seminomatous Germ Cell Cancer.
Background The aim of the present study was to investigate the effect of Cnidium Lactone on the expression of Mutant and histone deacetylase (HDAC) inhibitors in human prostate cancer (PC). Material/Methods We evaluated the effects of Prostate Cancer on cell proliferation and invasion in vitro and in vivo. Cells were incubated with a single dose of 25 (50 mg/kg), and 10 (100 mg/kg/day), respectively. The primary endpoint was the ability of the mRNA and protein levels of transcription factor (VEGF).	Background Cnidium Lactone is a natural coumarin compound that can inhibit a variety of cancer cell proliferation and induce cancer cell apoptosis. This experiment investigated the effect of cnidium Lactone on molecular marker expression in prostate cancer nude mice to study its effect in inducing apoptosis . Material/Methods We randomly and equally divided 30 male BALB/C nude mice inoculated with human prostate cancer cells PC-3 into a negative control group, a cyclophosphamide group (500 mg/Kg) , and cnidium Lactone groups at 3 doses (280 mg/Kg, 140 mg/Kg, and 70 mg/Kg). The mice were weighed at 2 weeks after administration.
Abstract Rationale: Aliskiren is a rare disease characterized by a variety of hypertensive disorders . The aim of the present study was to evaluate the effectiveness of aliskiren , pharmacodynamics , and clinical outcomes in patients with hypertension . Methods We reviewed the medical records of ambulatory blood pressure (BP) , kinetics , and high-sensitivity C-reactive protein (CRP) levels in the treatment of corneal tissue . We performed a retrospective review of the English literature search of PubMed , EMBASE , and Cochrane Library databases . The primary outcome was established by using a scoring system.	The use of nanoparticles in medicine is an attractive proposition. In the present study, Zinc oxide and silver nanoparticles were evaluated for their antidiabetic activity . Fifty male albino rats with weight 120 ± 20 and age 6 months were used . Animals were grouped as follows: control; did not receive any type of treatment, diabetic; received a single intraperitoneal dose of streptozotocin (100 mg/kg), diabetic + Zinc oxide nanoparticles (ZnONPs), received single daily oral dose of 10 mg/kg ZnONPs in suspension, diabetic + silver nanoparticles (SNPs); received a single daily oral dose of SNP of 10 mg/kg in suspension and diabetic + insulin; received a single subcutaneous dose of 0.6 units/50 g body.

System Output	Human Output
In conclusion , our study demonstrated that HOTAIR transcript expression in NSCLC cells. These results suggest that the overexpression of metastasis may play a role in regulating tumor progression and invasion. Further studies are needed to elucidate the molecular mechanisms involved in the development of cancer.	VWF is an autocrine/paracrine effector of signal transduction and gene expression in ECs that regulates EC adhesiveness for MSCs via activation of p38 MAPK in ECs.
In summary, the present study demonstrated that BBR could suppress tubulointerstitial fibrosis in NRK 52E cells. In addition, the effects of action on the EMT and HG of DN in the liver cell lines, and the inhibition of renal function may be a potential therapeutic agent for the treatment of diabetic mice. Further studies are needed to elucidate the mechanisms underlying the mechanism of these drugs in the future.	We characterised KGN cells as a malignant tumour model of GCTs. Continuously cultivated KGN cells acquire an aggressive phenotype, confirmed by the analysis of cellular activities and the expression of biomarkers. More strikingly, KGN cells injected under the skin were metastatic with nodule formation occurring mostly in the bowel. Thus, this cell line is a good model for analysing GCT progression and the mechanisms of metastasis.
In summary, the present study demonstrated that Hydrogen alleviates neuronal apoptosis in SAH rats. These results suggest that the Akt/GSK3 signaling pathway may be a novel therapeutic target for the treatment of EBI.	In reproductive-age women with ovarian endometriosis, the transcriptional factor SOX2 and NANOG are over expression. Future studies is need to determine their role in pathogenesis of ovarian endometriosis.
In conclusion, the present study demonstrated that DNA methylation and BMP-2 expression was associated with a higher risk of developing Wnt/-catenin pathway in OA chondrocytes. These results suggest that the SOST of Wnt signaling pathways may be a potential target for the treatment of disease.	Our novel data strongly suggest that BMP-2 signaling modulates SOST transcription in OA through changes in Smad 1/5/8 binding affinity to the CpG region located upstream of the TSS in the SOST gene, pointing towards the involvement of DNA methylation in SOST expression in OA.
The role of cancer stem cells to trastuzumab-based and breast cancer cell proliferation, migration, and invasion.	Long-term supplementation of decaffeinated green tea extract does not modify body weight or abdominal obesity in a randomized trial of men at high risk for Prostate cancer.

Table 2: Good Examples that Passed Turing Test

References

Chonghai Hu, Weike Pan, and James T. Kwok. 2009. Accelerated gradient methods for stochastic optimization and online learning. In *Advances in Neural Information Processing Systems*.