Introduction

This document has as purpose to serve as an exercise for you to try out some things within LaTeX for each level individually. At the end there are also some challenges if you think you got what it takes. Good luck in recreating this document!

Beginner

$\big((\neg A \Rightarrow B) \lor (C \land D)\big) \leftrightarrow E$

1	2	3
4	5	
6	7	α

Question! Is dark mode better than light mode?

a) Yes

b) No

Maybe I *want* to create a **table**$\cdots$

Or maybe just some ~~words~~ that are VERY important.

$$f(x) = \frac{1}{2} \cdot \binom{4}{1}$$

$$f_2(x) = \int_a^b x^2$$

A nice ♫ perhaps? Please visit `youtube.com`

Intermediate

Lët's gó¡

Hello. . .

$$\alpha(z_1, z_2) = \left(\frac{\partial \beta(z_1, z_2)}{\partial z_1}, \frac{\partial \beta(z_1, z_2)}{\partial z_2} \right)$$

Is it me you're looking for?

$$\begin{aligned} \vec{v} &= \begin{pmatrix} \lambda & 0 \\ 0 & \lambda \end{pmatrix} \\ &= \lambda \cdot \mathrm{I} \end{aligned}$$

Clearly the complexity of this algorithm is $\mathcal{O}\left(n \log n\right)$, as is given by the following:

```
private void smartMethod() {
    Operator op = new Operator(nr_of_questions, input);
    if (input.size() < 3) {
        op.low_students();
        answers = op.getAnswers();
    } else if (op.correct_input()) {
        op.smartSolution();
        answers = op.getAnswers();
    } else {
        answers.add((long) 0);
        answers.add((long) 0);
    }
}
```

Given is that $\forall \eta, \exists \pi \in \mathbb{C}$ such that $\gamma(\boldsymbol{\eta}) \stackrel{?}{=} \begin{cases} 0 & \text{if } \eta = 0 \\ \max\limits_{i \geq 5} \left[\dfrac{\pi}{\lambda} \right] & \text{if } \eta > 0 \end{cases}$

Little bit wrong

Figure 1: This is COGNAC!

Advanced

-

Expert

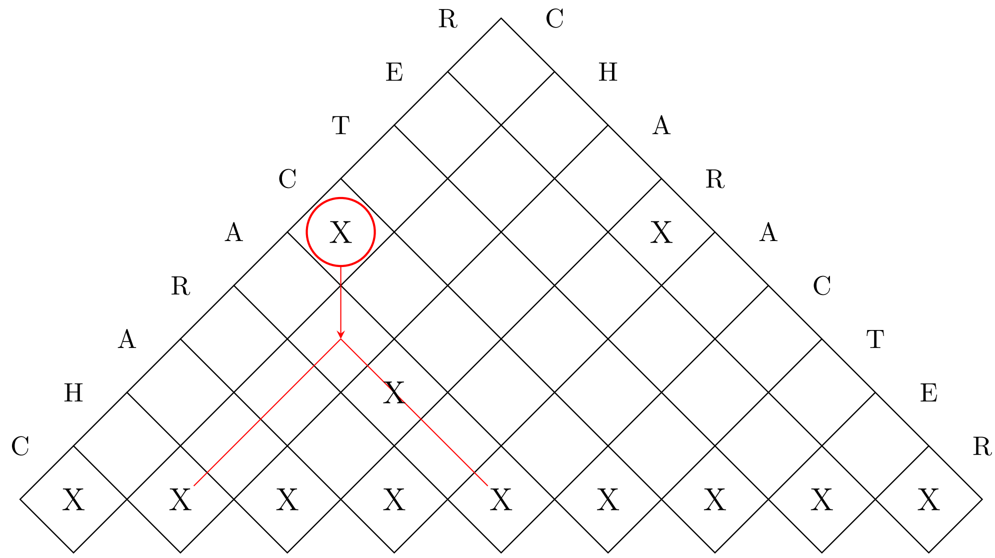
-

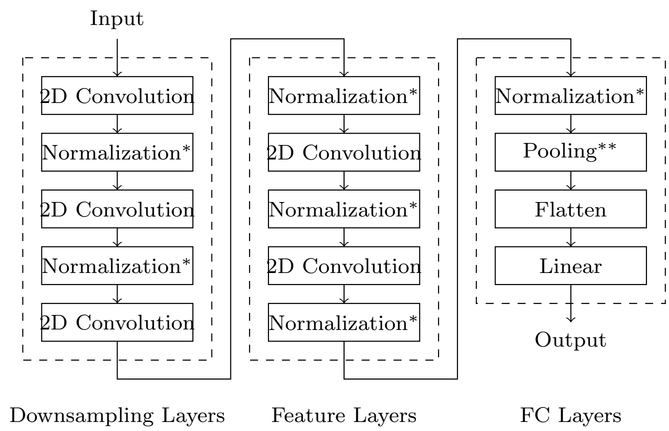
Godlike

-

Challenges

Tip: I created these images with the Tikz package from scratch, so they are created solely in LaTeX!





*Group Normalization

**2D Adaptive Average Pooling

Algorithm 1 Deep Q-Network with replay buffer

Initialize replay memory $\mathcal{D}$ to capacity N
Initialize action-value function Q with random weights
for episode=1,M **do**
  Initialize sequence $s_1 = \{x_1\}$ and preprocessed sequenced $\phi_1 = \phi(s_1)$
  for t=1,T **do**
    With probability ϵ select a random action a_t
    otherwise select $a_t = \max_a Q^*(\phi(s_t), a; \theta)$
    Execute action a_t in emulator and observe reward r_t and image x_{t+1}
    Set $s_{t+1} = s_t, a_t, x_{t+1}$ and preprocess $\phi_{t+1} = \phi(s_{t+1})$
    Store transition $(\phi_j, a_j, r_j, \phi_{j+1})$ in $\mathcal{D}$
    Sample random minibatch of transitions $(\phi_j, a_j, r_j, \phi_{j+1})$ from $\mathcal{D}$
    Set $y_j = \begin{cases} r_j & \text{for terminal } \phi_{j+1} \\ r_j + \gamma \max_{a'} Q(\phi_{j+1}, a'; \theta) & \text{for non-terminal } \phi_{j+1} \end{cases}$
    Perform a gradient descent step on $(y_j - Q(\phi_j, a_j; \theta))$ with respect to weights θ
    Every C steps reset $\hat{Q} = Q$
  end for
end for