BRIN-Q Beamer Seminar Template

QuMaT Group Meeting 20260119
A. R. T. Nugraha (@fisikawan.gendeng)

Outline

- **Typography & Lists**

- **Mathematics & Blocks**

- **Image Layouts**

- **Code & Algorithms**

- **Conclusion**

Typography & Colors

This template uses **Helvetica** for text and *Euler* for math.

We can use the custom color palette defined in the preamble:

- ▶ Normal text is Dark Grey (cw).
- ▶ Important keywords can be **Purple (cp)**.
- ▶ Alerts are naturally **Red (cr)**.
- ▶ Comments or secondary info are *Orange (co)*.

"Design is intelligence made visible."

Animated Lists (Enumerate)

Here is the **Red Circle** enumeration style with step-by-step reveal:

1. First point appears immediately.

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2. Second point appears on next click.

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1. First point appears immediately.
2. Second point appears on next click.
3. Third point appears last.
   - Sub-items use the standard purple arrow.
   - They fit strictly within the layout.

Animated Lists (Enumerate)

Here is the **Red Circle** enumeration style with step-by-step reveal:

1. First point appears immediately.
2. Second point appears on next click.
3. Third point appears last.
   - ► Sub-items use the standard purple arrow.
   - ► They fit strictly within the layout.

Transitions are smooth and clear!

Theorems & Blocks

Theorem 1 (Pythagoras)

In a right-angled triangle, the square of the hypotenuse c is equal to the sum of squares of the other two sides:

$$a^2 + b^2 = c^2$$

Example: Circle Area

If the radius is $r = 10$, then the area is:

$$A = \pi r^2 = 100\pi$$

Euler Math Font Capabilities

The `eulervm` package gives a distinct "handwritten" look.

▶ **Greek Letters:** $\alpha, \beta, \Gamma, \Delta, \Omega, \xi, \varphi$

▶ **Calculus:**

$$\int_{-\infty}^{\infty} e^{-x^2}\, dx = \sqrt{\pi}$$

▶ **Set Theory:**

$$\forall x \in \mathbb{R}, \exists y > x \text{ such that } y \in \mathcal{S}$$

Handling Long Equations

For complex derivations, use the `align*` environment:

$$f(x) = \sum_{n=0}^{\infty} \frac{f^{(n)}(a)}{n!} (x-a)^n$$

$$= f(a) + f'(a)(x-a) + \frac{f''(a)}{2!}(x-a)^2 + \dots$$

$$\approx \underbrace{1 + x + \frac{x^2}{2}}_{\text{Approximation for } e^x}$$

Note how the math font blends well with the comic style text.

Split Layout (Left/Right)

Concept Description

This image demonstrates the core principle of the algorithm.

- ▶ Input processing
- ▶ Feature extraction
- ▶ Final classification

2 × 1 Figure Layout

Comparing two results side-by-side:

Result A

Result B

3 × 1 Figure Layout

Evolution of the dataset over time:

$t = 0$

$t = 10$

$t = 100$

2 × 2 Figure Layout

Source Code (Minted)

Here is a Python function using our custom colors:

```python
def calculate_metric(data):
    # This comment should be Orange (co)
    result = 0
    for x in data:
        if x > 0:
            result += x * 2  # Logic
    return result
```

The frame color is gray, and keywords are highlighted.

Algorithmic Pseudocode

Algorithm 1 Euclidean Distance

1: **Input:** Points P and Q
2: $sum \leftarrow 0$
3: **for** $i = 1$ to n **do**
4:     $diff \leftarrow P_i - Q_i$
5:     $sum \leftarrow sum + diff^2$
6: **end for**
7: **return** $\sqrt{sum}$

Critical Information

Sometimes we need to draw attention to warnings.

Warning: Convergence

The algorithm may not converge if the learning rate $\eta > 0.1$. Please ensure normalization is applied first.

IMPORTANT!

Summary

▶ **Style:** Comic look + Serious Math.

▶ **Structure:** Clear hierarchy with Headers/Footers.

▶ **Visuals:** Flexible Grid Layouts.

Thank You!

Any Questions?