Sonuçlar:

1. **Tüm testler için accuracy değerlerinin karşılaştırması:**

	Adam, B.S.=128, lr=0.001	**SGD, B.S.=128, lr=0.001**	**Adam, B.S.=64, lr=0.001**
ResNet 18	89.01	88.46	90.43
Knowledge Distillation (T=1.5, α=0.5, λ=0.5) Teacher: ResNet18, Student: ResNet18	89.67	89.18	90.98
Knowledge Distillation (T=2, α=0.5, λ=0.5) Teacher: ResNet18, Student: ResNet18	90.24	89.51	**91.29**
Knowledge Distillation (T=2.5, α=0.5, λ=0.5) Teacher: ResNet18, Student: ResNet18	**90.27**	**89.81**	91.20
Knowledge Distillation (T=3, α=0.5, λ=0.5) Teacher: ResNet18, Student: ResNet18	89.65	88.85	91.07
Knowledge Distillation (T=2, α=0.7, λ=0.3) Teacher: ResNet18, Student: ResNet18	89.65	89.39	91.15
Knowledge Distillation (T=2, α=0.3, λ=0.7) Teacher: ResNet18, Student: ResNet18	52.47	89.85	90.99
Light ResNet 18	77.53	73.27	78.10
Knowledge Distillation (T=1.5, α=0.5, λ=0.5) Teacher: ResNet18, Student: Light ResNet 18	88.85	87.60	89.06
Knowledge Distillation (T=2, α=0.5, λ=0.5) Teacher: ResNet18, Student: Light ResNet 18	88.95	88.13	89.03
Knowledge Distillation (T=2.5, α=0.5, λ=0.5) Teacher: ResNet18, Student: Light ResNet 18	**89.25**	87.99	**89.56**
Knowledge Distillation (T=3, α=0.5, λ=0.5) Teacher: ResNet18, Student: Light ResNet 18	89.02	**88.21**	89.51
Knowledge Distillation (T=2, α=0.7, λ=0.3) Teacher: ResNet18, Student: Light ResNet 18	88.72	87.91	89.61
Knowledge Distillation (T=2, α=0.3, λ=0.7) Teacher: ResNet18, Student: Light ResNet 18	89.10	87.78	89.12
Transfer L. (2,3,4. katmanlar kapalı)	43.47	40.63	43.17
Transfer L. (2,3,4. katmanlar açık)	86.36	84.38	86.30

2. **Adam, Batch size=128, lr=0.001:**

Adam, Batch size=128, lr=0.001	Accuracy	Precision	Recall	F1 Score
ResNet 18	89.01	89.01	89.01	89.00
Knowledge Distillation (T=1.5, α=0.5, λ=0.5) Teacher: ResNet18, Student: ResNet18	89.67	89.69	89.67	89.66
Knowledge Distillation (T=2, α=0.5, λ=0.5) Teacher: ResNet18, Student: ResNet18	90.24	90.29	90.24	90.23
Knowledge Distillation (T=2.5, α=0.5, λ=0.5) Teacher: ResNet18, Student: ResNet18	90.27	90.41	90.27	90.30
Knowledge Distillation (T=3, α=0.5, λ=0.5) Teacher: ResNet18, Student: ResNet18	89.65	89.69	89.65	89.66
Knowledge Distillation (T=2, α=0.7, λ=0.3) Teacher: ResNet18, Student: ResNet18	89.65	89.65	89.65	89.63
Knowledge Distillation (T=2, α=0.3, λ=0.7) Teacher: ResNet18, Student: ResNet18	52.47	53.69	52.47	51.07
Light ResNet 18	77.53	77.38	77.53	77.37
Knowledge Distillation (T=1.5, α=0.5, λ=0.5) Teacher: ResNet18, Student: Light ResNet 18	88.85	88.82	88.85	88.82
Knowledge Distillation (T=2, α=0.5, λ=0.5) Teacher: ResNet18, Student: Light ResNet 18	88.95	88.92	88.95	88.87
Knowledge Distillation (T=2.5, α=0.5, λ=0.5) Teacher: ResNet18, Student: Light ResNet 18	89.25	89.32	89.25	89.25
Knowledge Distillation (T=3, α=0.5, λ=0.5) Teacher: ResNet18, Student: Light ResNet 18	89.02	89.09	89.02	89.01
Knowledge Distillation (T=2, α=0.7, λ=0.3) Teacher: ResNet18, Student: Light ResNet 18	88.72	88.76	88.72	88.71
Knowledge Distillation (T=2, α=0.3, λ=0.7) Teacher: ResNet18, Student: Light ResNet 18	89.10	89.08	89.10	89.08

Adam, Batch size=128, lr=0.001	Accuracy	Precision	Recall	F1 Score
Transfer Learning (2,3,4. katmanlar açık)	86.36	86.36	86.36	86.36
Transfer L. (2,3,4. katmanlar kapalı)	43.47	43.39	43.47	43.33

3. **SGD, Batch size=128, lr=0.001:**

SGD, Batch size=128, lr=0.001	Accuracy	Precision	Recall	F1 Score
ResNet 18	88.46	88.48	88.46	88.45
Knowledge Distillation (T=1.5, α=0.5, λ=0.5) Teacher: ResNet18, Student: ResNet18	89.18	89.19	89.18	89.18
Knowledge Distillation (T=2, α=0.5, λ=0.5) Teacher: ResNet18, Student: ResNet18	89.51	89.60	89.51	89.54
Knowledge Distillation (T=2.5, α=0.5, λ=0.5) Teacher: ResNet18, Student: ResNet18	89.81	89.83	89.81	89.80
Knowledge Distillation (T=3, α=0.5, λ=0.5) Teacher: ResNet18, Student: ResNet18	88.85	88.91	88.85	88.87
Knowledge Distillation (T=2, α=0.7, λ=0.3) Teacher: ResNet18, Student: ResNet18	89.39	89.42	89.39	89.39
Knowledge Distillation (T=2, α=0.3, λ=0.7) Teacher: ResNet18, Student: ResNet18	89.85	89.88	89.85	89.85
Light ResNet 18	73.27	73.32	73.27	73.29
Knowledge Distillation (T=1.5, α=0.5, λ=0.5) Teacher: ResNet18, Student: Light ResNet 18	87.60	87.74	87.60	87.65
Knowledge Distillation (T=2, α=0.5, λ=0.5) Teacher: ResNet18, Student: Light ResNet 18	88.13	88.25	88.13	88.16
Knowledge Distillation (T=2.5, α=0.5, λ=0.5) Teacher: ResNet18, Student: Light ResNet 18	87.99	88.01	87.99	87.99
Knowledge Distillation (T=3, α=0.5, λ=0.5) Teacher: ResNet18, Student: Light ResNet 18	88.21	88.21	88.21	88.17
Knowledge Distillation (T=2, α=0.7, λ=0.3) Teacher: ResNet18, Student: Light ResNet 18	87.91	87.1	87.91	87.83
Knowledge Distillation (T=2, α=0.3, λ=0.7) Teacher: ResNet18, Student: Light ResNet 18	87.78	87.79	87.78	87.77

SGD, Batch size=128, lr=0.001	Accuracy	Precision	Recall	F1 Score
Transfer Learning (2,3,4. katmanlar açık)	84.38	84.31	84.38	84.33
Transfer L. (2,3,4. katmanlar kapalı)	40.63	41.39	40.63	40.46

4. **Adam, Batch size=64, lr=0.001:**

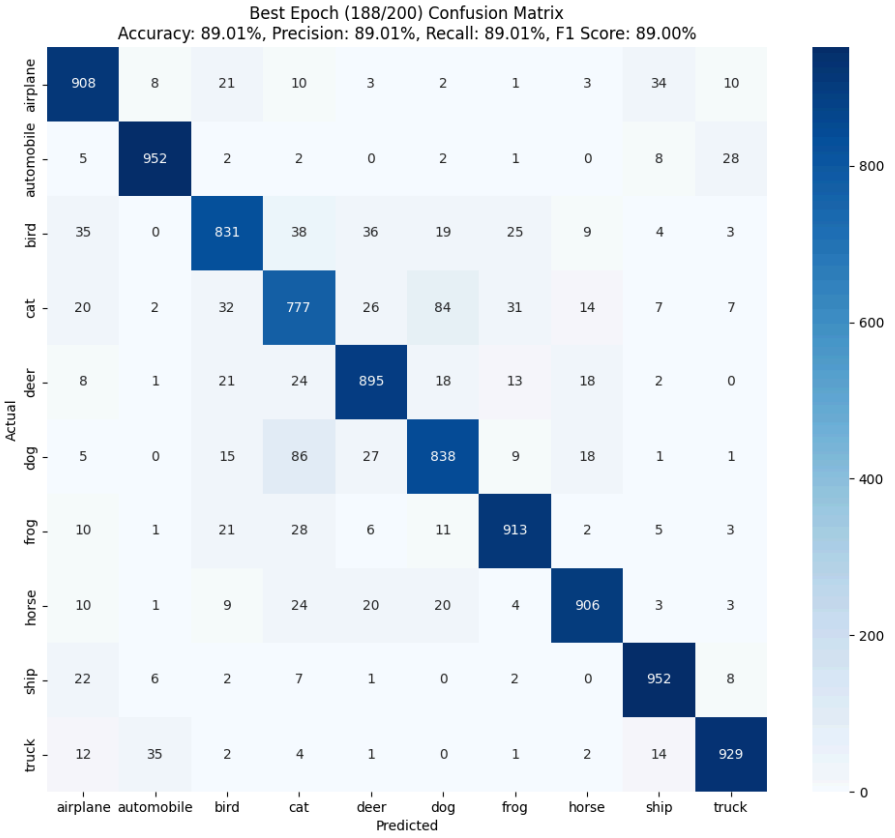
Adam, Batch size=64, lr=0.001	Accuracy	Precision	Recall	F1 Score
ResNet 18	90.43	90.51	90.43	90.46
Knowledge Distillation (T=1.5, α=0.5, λ=0.5) Teacher: ResNet18, Student: ResNet18	90.98	90.95	90.98	90.95
Knowledge Distillation (T=2, α=0.5, λ=0.5) Teacher: ResNet18, Student: ResNet18	91.29	91.29	91.29	91.29
Knowledge Distillation (T=2.5, α=0.5, λ=0.5) Teacher: ResNet18, Student: ResNet18	91.20	91.21	91.20	91.19
Knowledge Distillation (T=3, α=0.5, λ=0.5) Teacher: ResNet18, Student: ResNet18	91.07	91.04	91.07	91.04
Knowledge Distillation (T=2, α=0.7, λ=0.3) Teacher: ResNet18, Student: ResNet18	91.15	91.18	91.15	91.11
Knowledge Distillation (T=2, α=0.3, λ=0.7) Teacher: ResNet18, Student: ResNet18	90.99	91.04	90.99	91.01
Light ResNet 18	78.10	78.21	78.10	78.13
Knowledge Distillation (T=1.5, α=0.5, λ=0.5) Teacher: ResNet18, Student: Light ResNet 18	89.06	89.05	89.06	89.02
Knowledge Distillation (T=2, α=0.5, λ=0.5) Teacher: ResNet18, Student: Light ResNet 18	89.03	89.11	89.03	89.04
Knowledge Distillation (T=2.5, α=0.5, λ=0.5) Teacher: ResNet18, Student: Light ResNet 18	89.56	89.62	89.56	89.56
Knowledge Distillation (T=3, α=0.5, λ=0.5) Teacher: ResNet18, Student: Light ResNet 18	89.51	89.63	89.51	89.52
Knowledge Distillation (T=2, α=0.7, λ=0.3) Teacher: ResNet18, Student: Light ResNet 18	89.61	89.59	89.61	89.58
Knowledge Distillation (T=2, α=0.3, λ=0.7) Teacher: ResNet18, Student: Light ResNet 18	89.12	89.09	89.12	89.08

Adam, Batch size=64, lr=0.001	Accuracy	Precision	Recall	F1 Score
Transfer Learning (2,3,4. katmanlar açık)	86.30	86.37	86.30	86.31
Transfer L. (2,3,4. katmanlar kapalı)	43.17	43.61	43.17	42.91

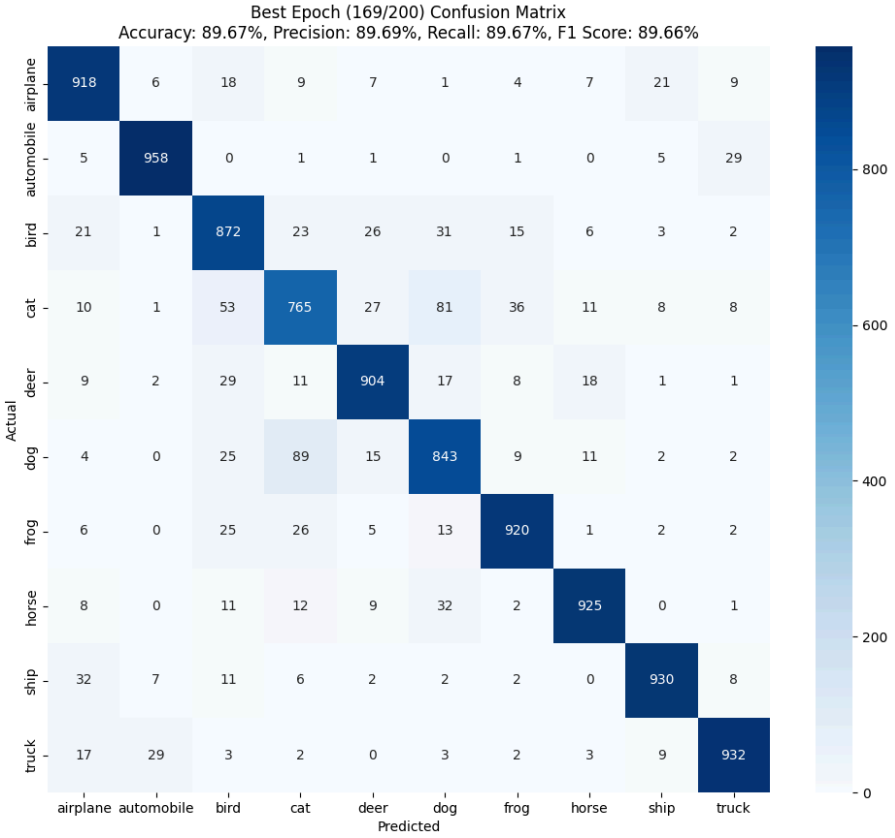
5. Knowledge Distillation Confision Matrisler:

<u>Adam, Batch size=128, lr=0.001 için:</u>

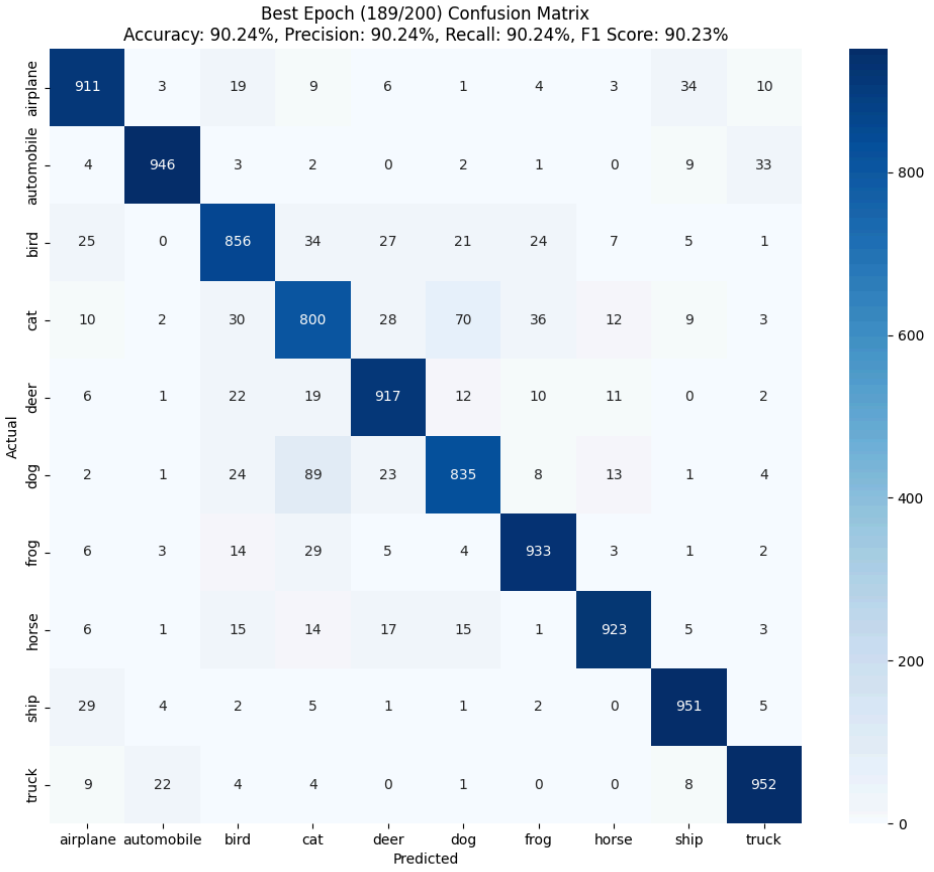
- **ResNet 18:**



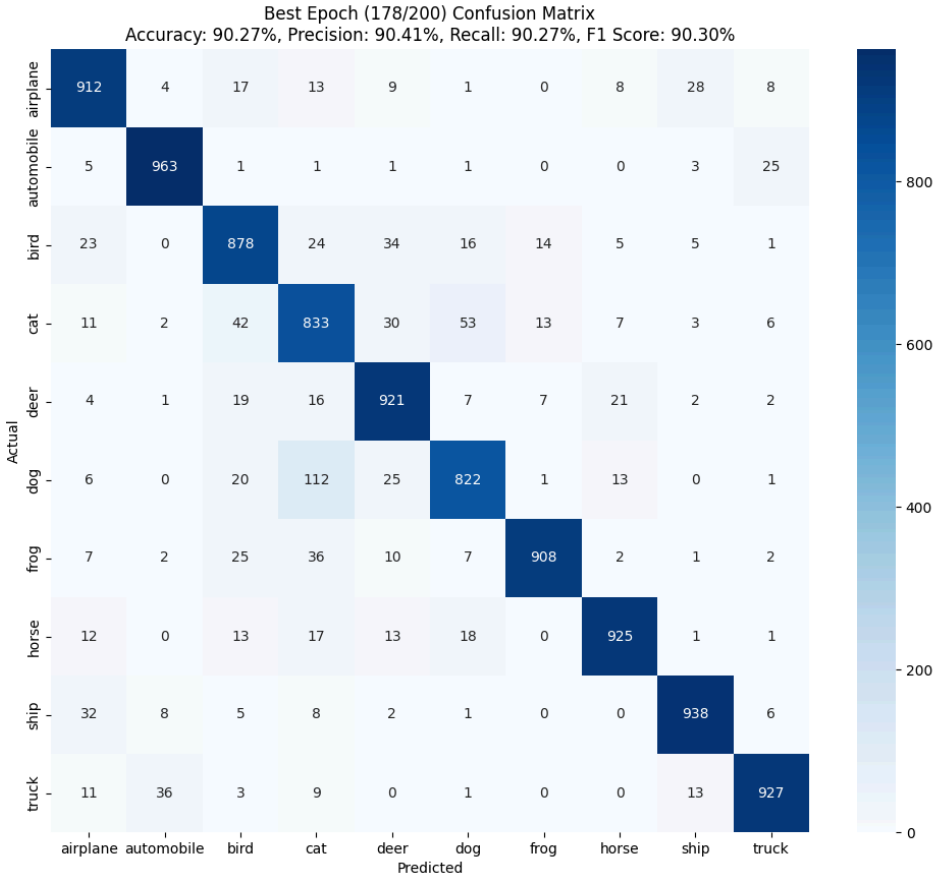
- **Knowledge Distillation (T=1.5, α=0.5, λ=0.5) Teacher: ResNet18, Student: ResNet18:**



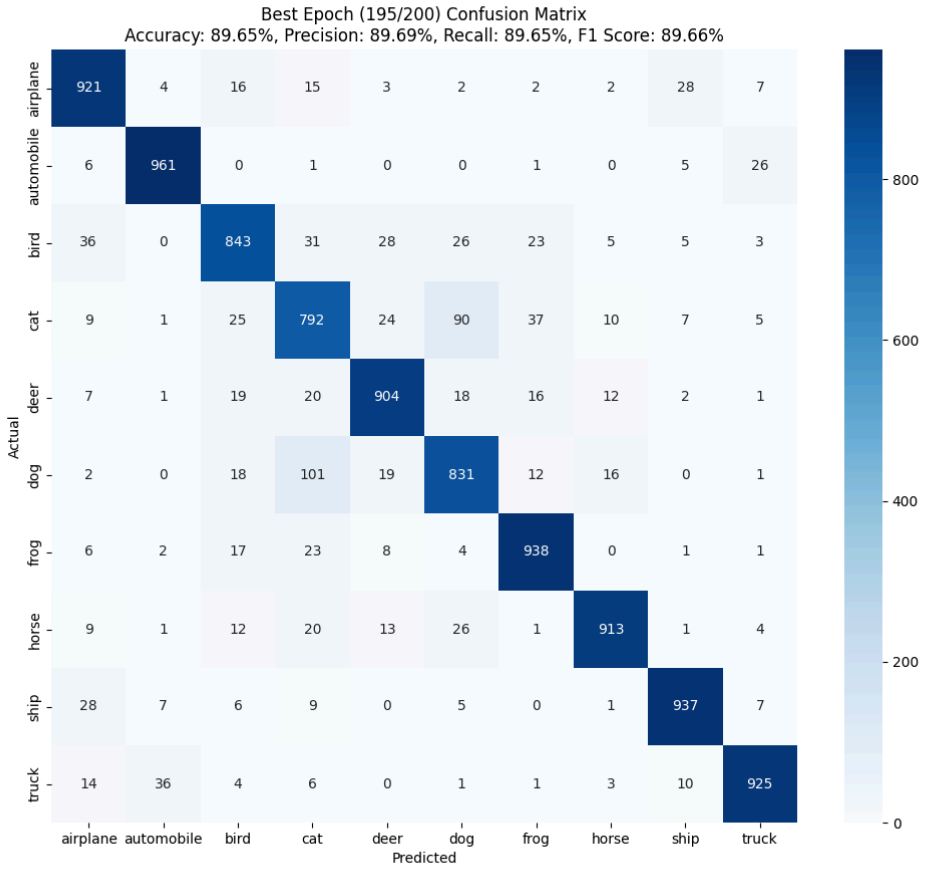
- **Knowledge Distillation (T=2, α=0.5, λ=0.5) Teacher: ResNet18, Student: ResNet18:**



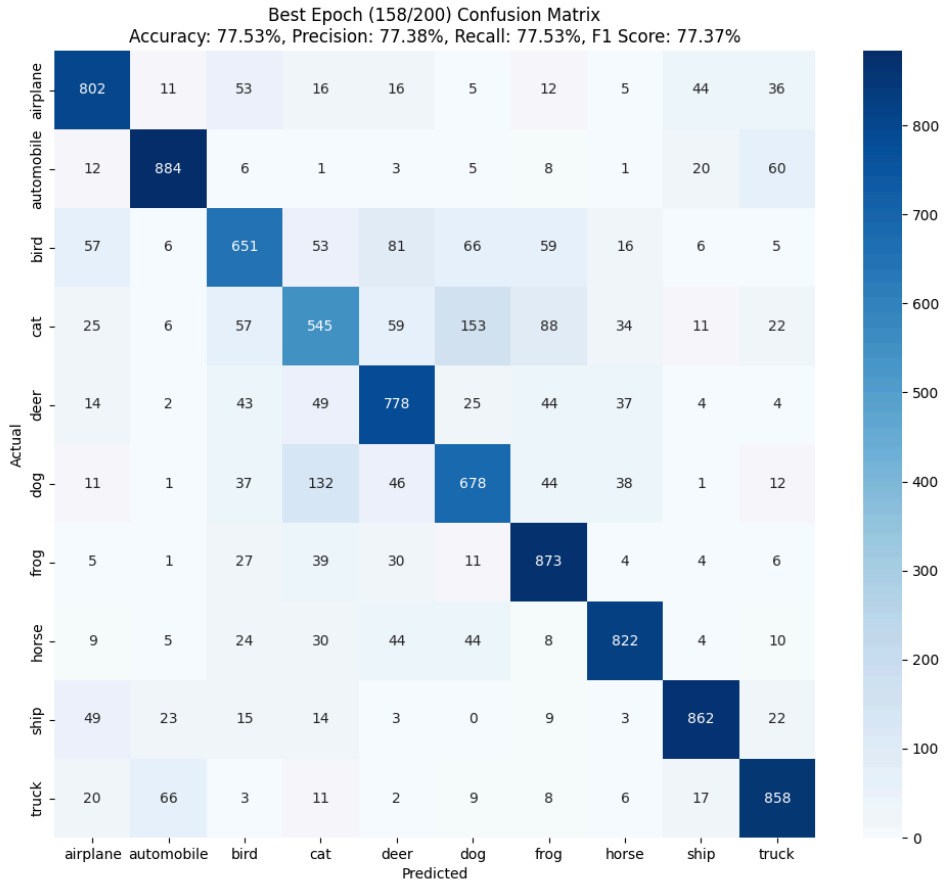
- **Knowledge Distillation (T=2.5, α=0.5, λ=0.5) Teacher: ResNet18, Student: ResNet18**



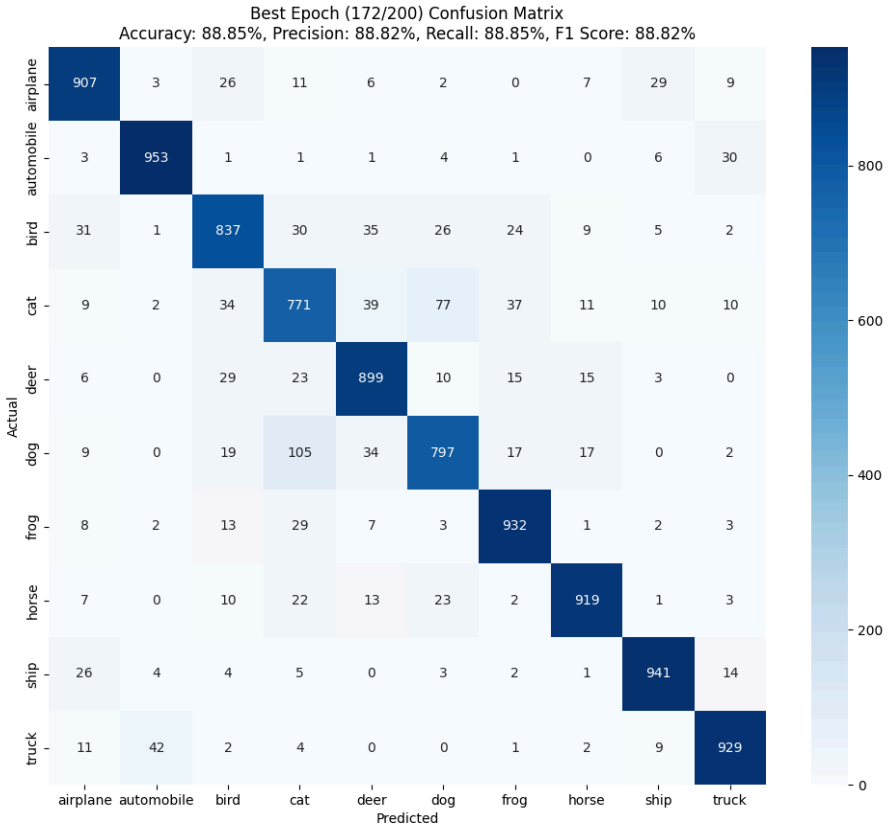
- **Knowledge Distillation (T=3, α=0.5, λ=0.5) Teacher: ResNet18, Student: ResNet18:**



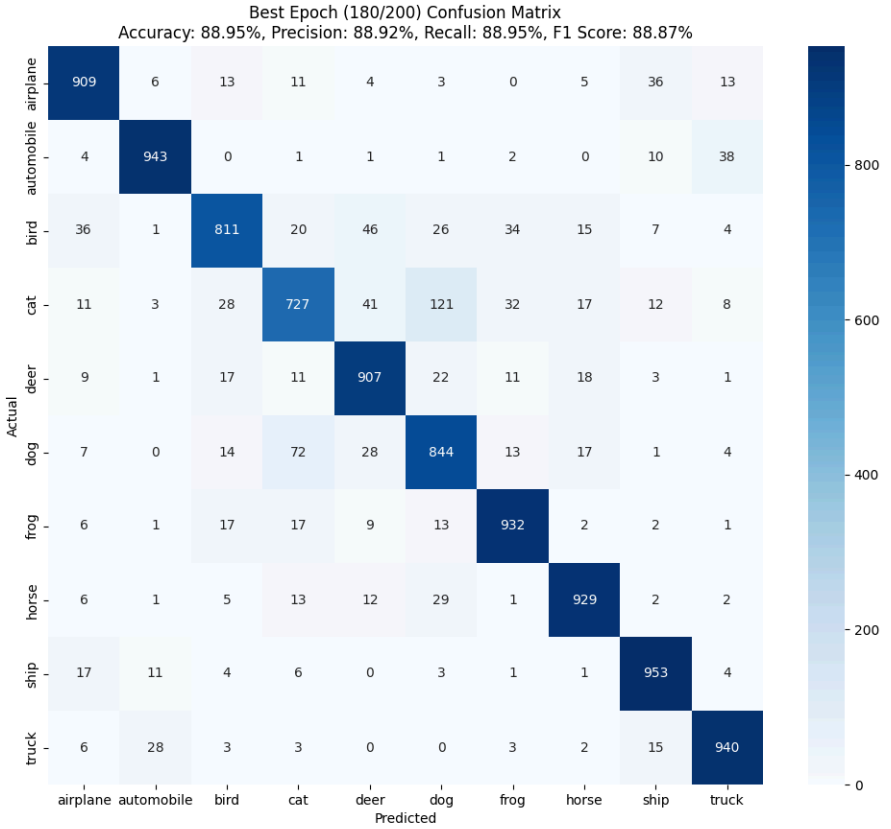
- **Light ResNet 18:**



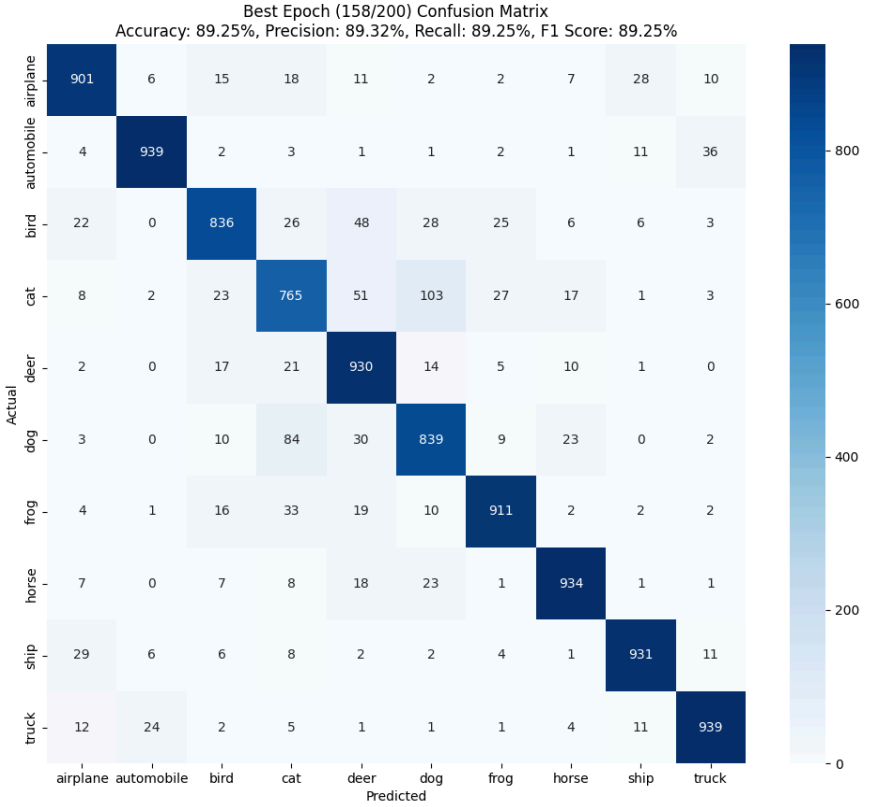
- **Knowledge Distillation (T=1.5, α=0.5, λ=0.5) Teacher: ResNet18, Student: Light ResNet 18:**



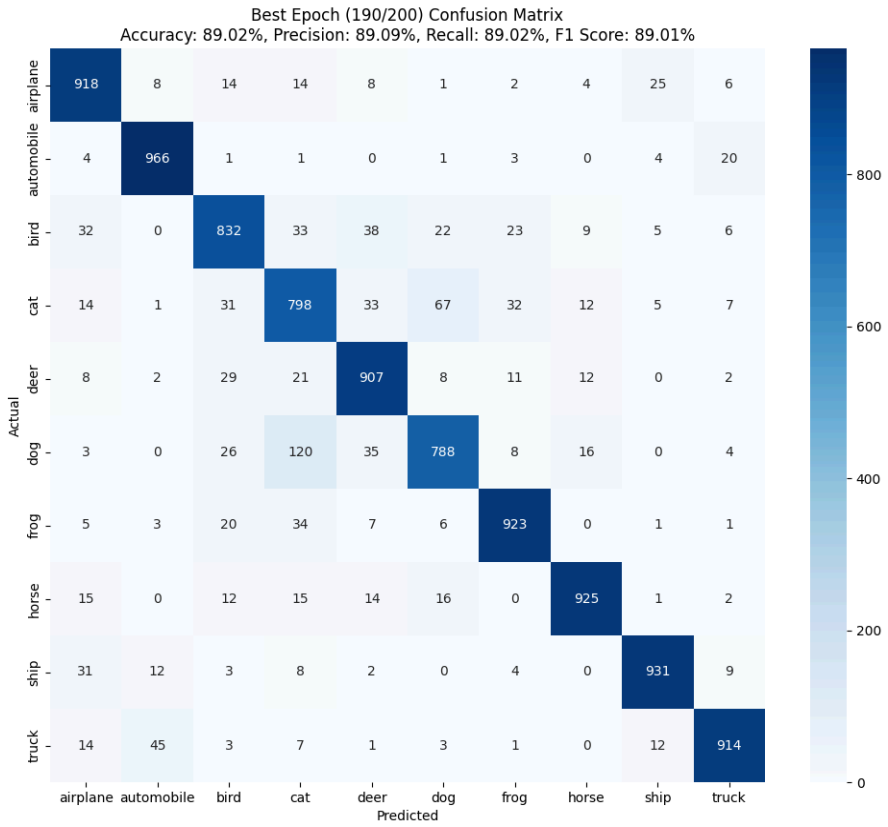
- **Knowledge Distillation (T=2, α=0.5, λ=0.5) Teacher: ResNet18, Student: Light ResNet 18:**



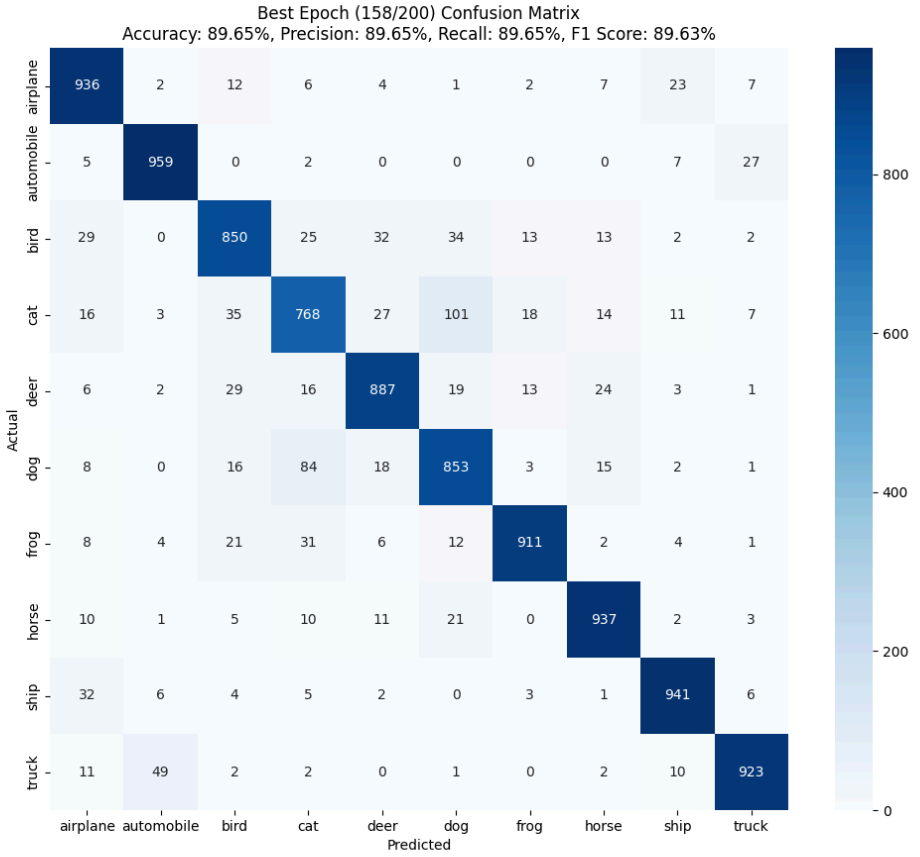
- **Knowledge Distillation (T=2.5, α=0.5, λ=0.5) Teacher: ResNet18, Student: Light ResNet 18:**



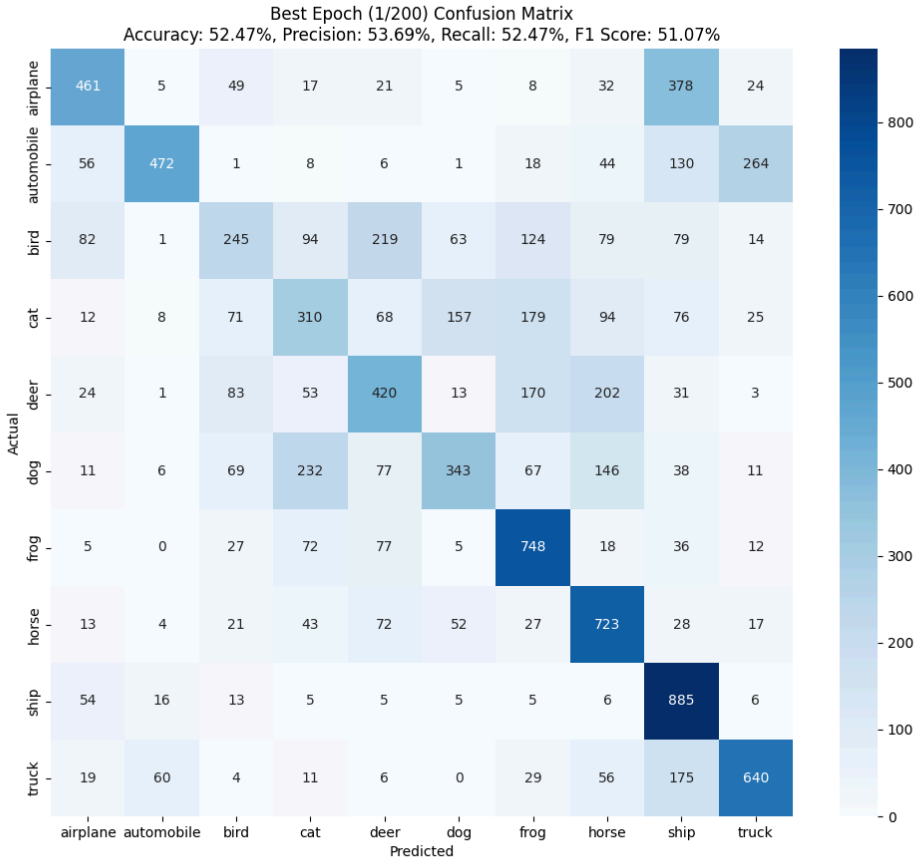
- **Knowledge Distillation (T=3, α=0.5, λ=0.5) Teacher: ResNet18, Student: Light ResNet 18:**



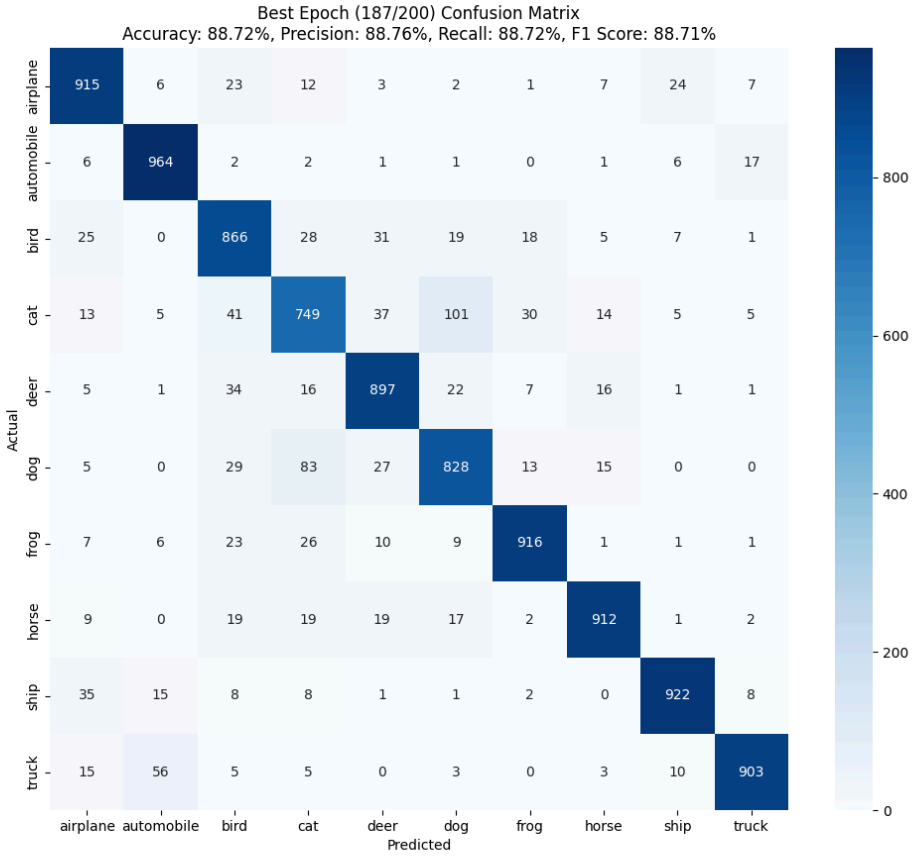
- **Knowledge Distillation (T=2, α=0.7, λ=0.3) Teacher: ResNet18, Student: ResNet18**



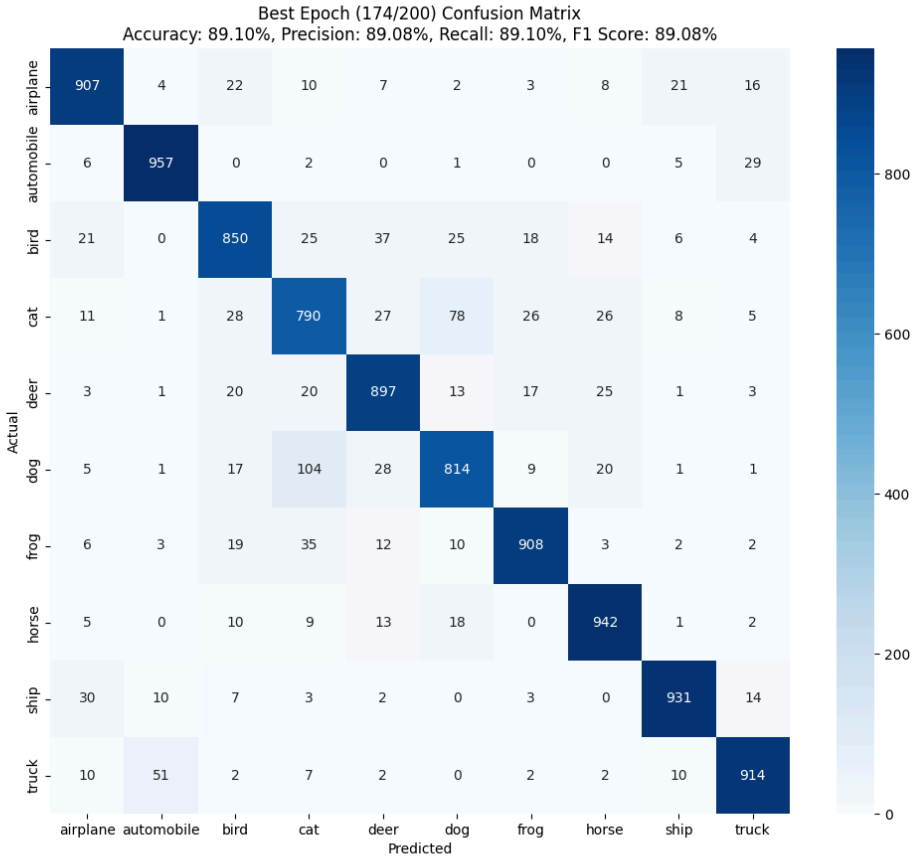
- **Knowledge Distillation (T=2, α=0.3, λ=0.7) Teacher: ResNet18, Student: ResNet18**



- **Knowledge Distillation (T=2, α=0.7, λ=0.3) Teacher: ResNet18, Student: Light ResNet 18**

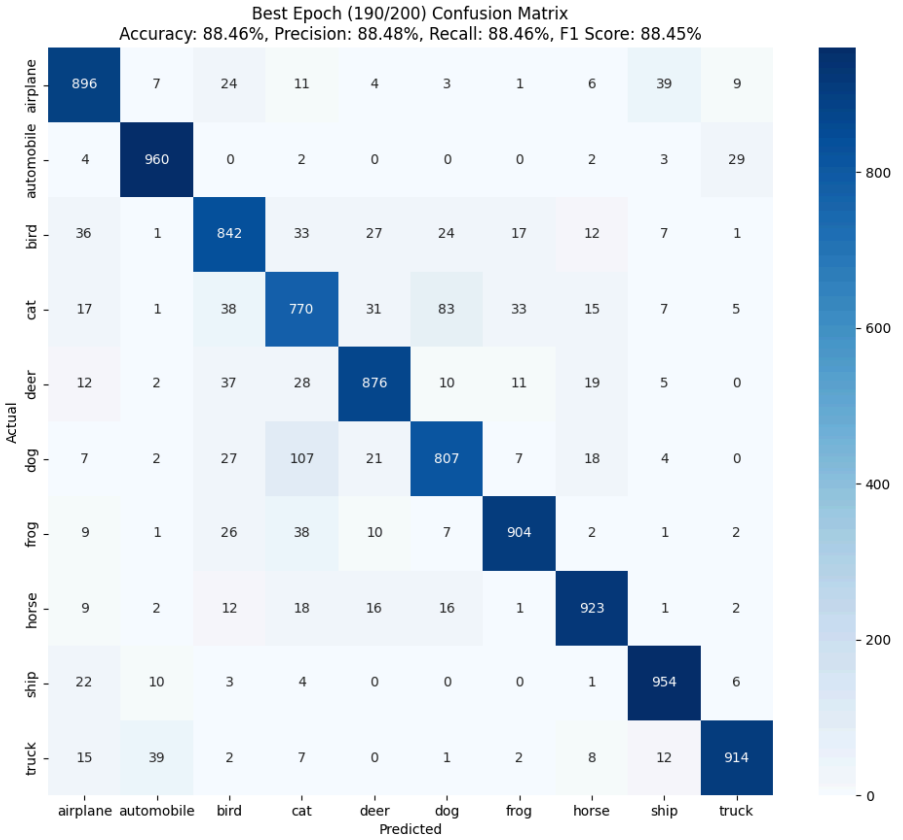


- **Knowledge Distillation (T=2, α=0.3, λ=0.7) Teacher: ResNet18, Student: Light ResNet 18**

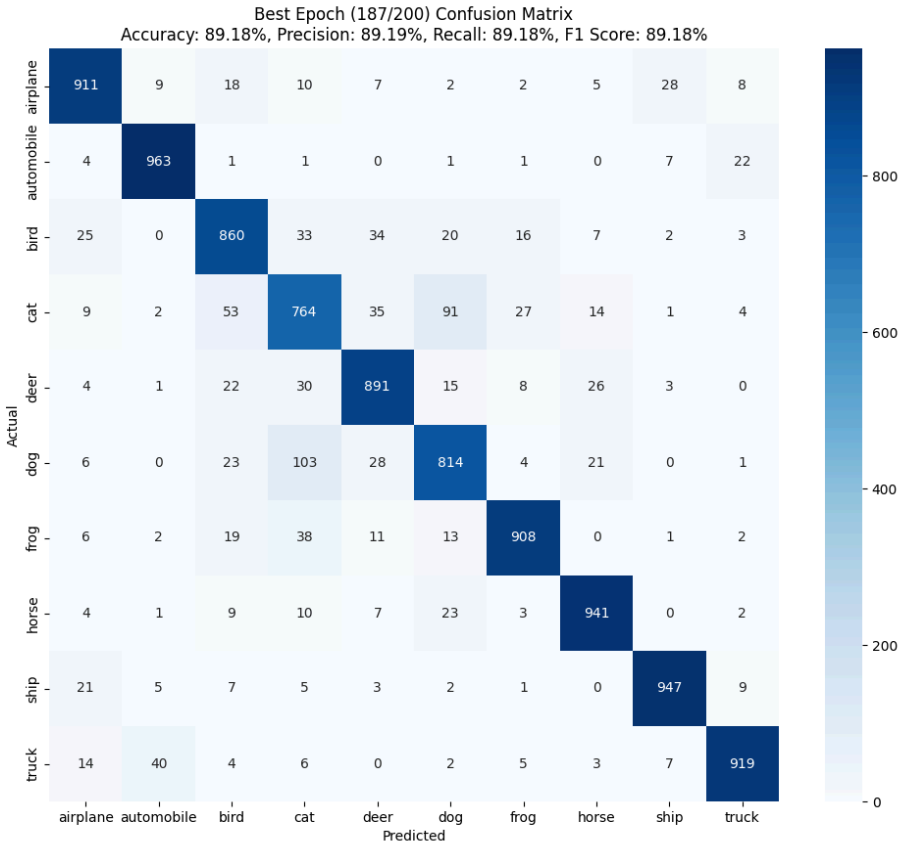


SGD, Batch size=128, lr=0.001 için:

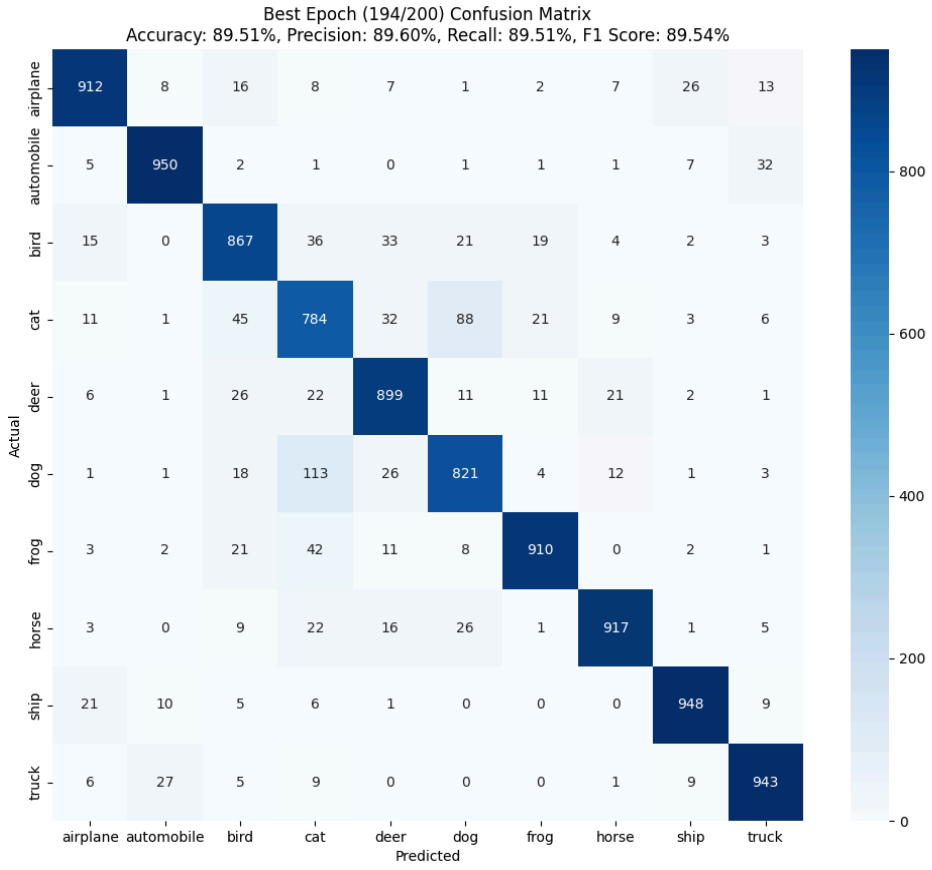
- **ResNet 18:**



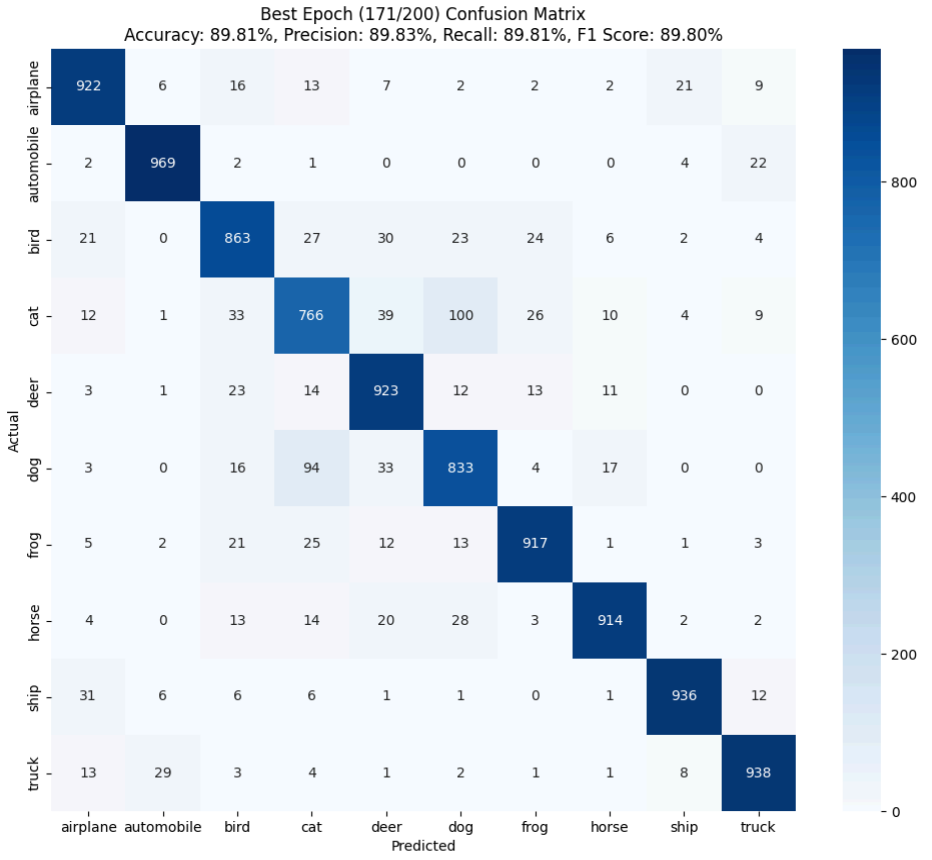
- **Knowledge Distillation (T=1.5, α=0.5, λ=0.5) Teacher: ResNet18, Student: ResNet18**



- **Knowledge Distillation (T=2, α=0.5, λ=0.5) Teacher: ResNet18, Student: ResNet18**

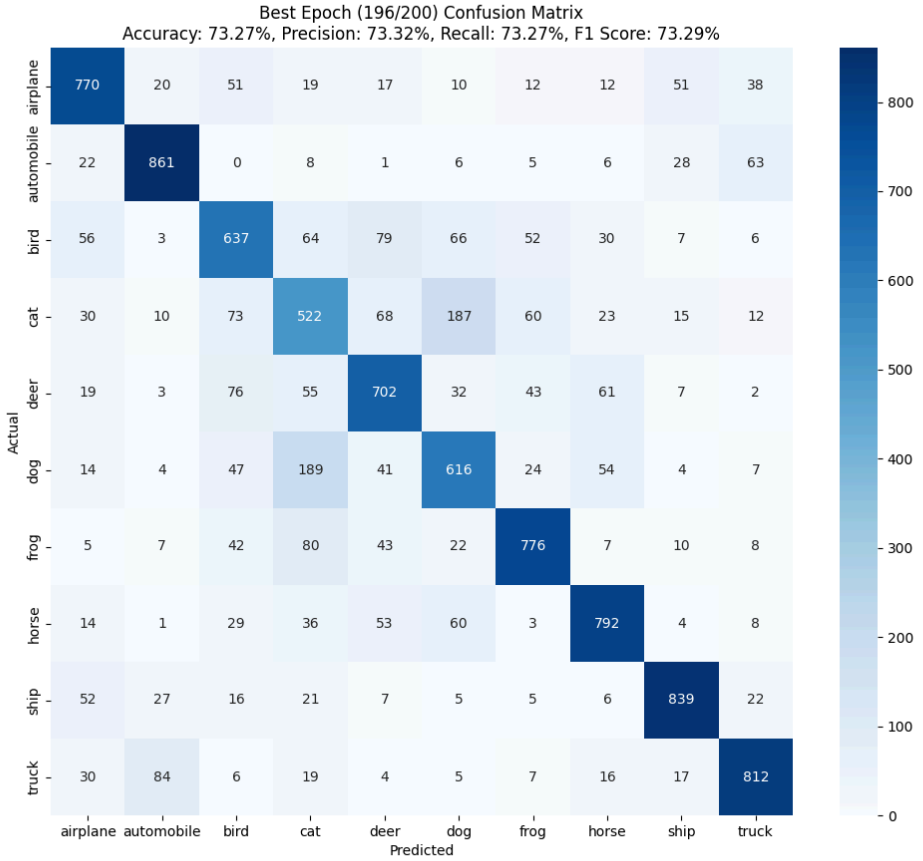


- **Knowledge Distillation (T=2.5, α=0.5, λ=0.5) Teacher: ResNet18, Student: ResNet18**

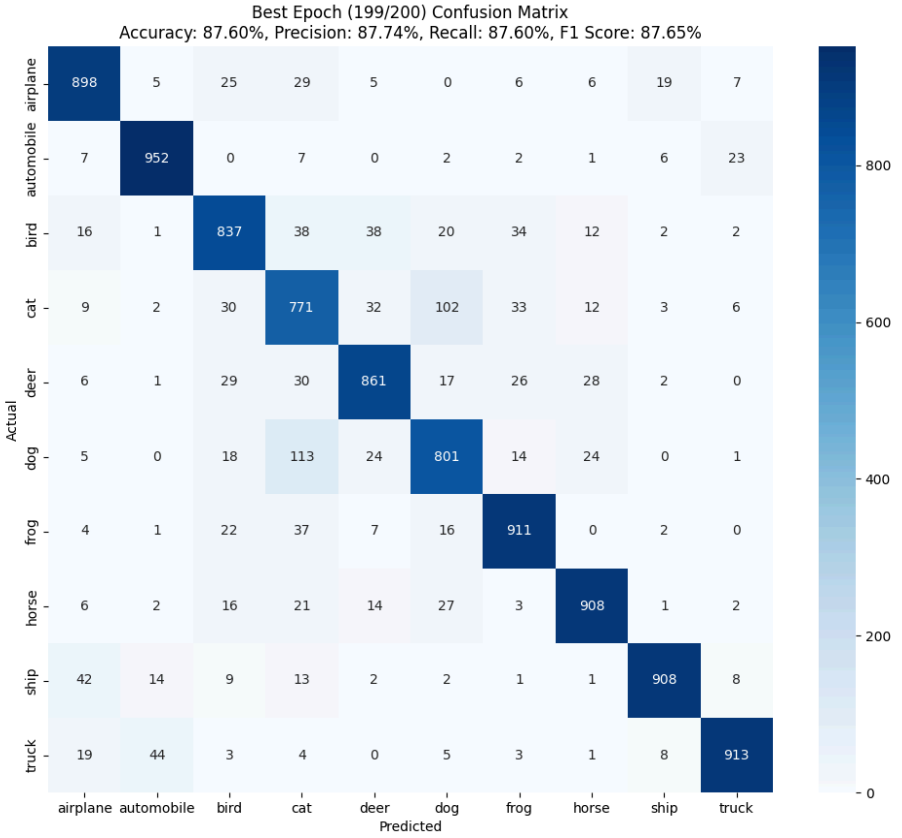


- **Knowledge Distillation (T=3, α=0.5, λ=0.5) Teacher: ResNet18, Student: ResNet18**

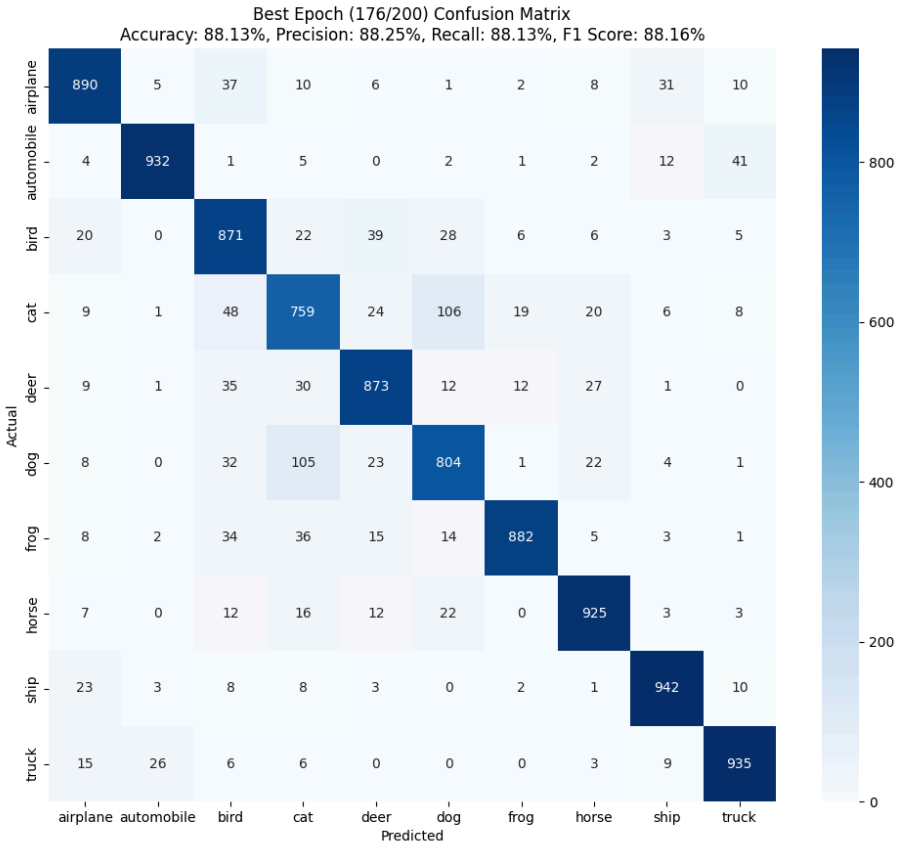
- **Light ResNet 18:**



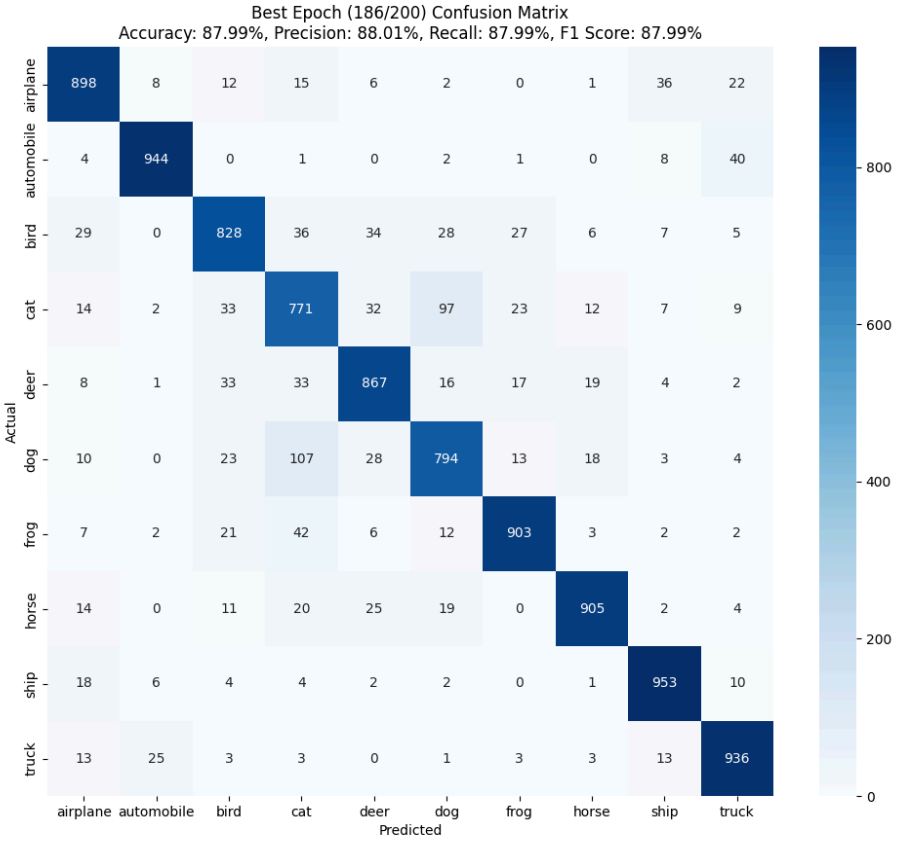
- **Knowledge Distillation (T=1.5, α=0.5, λ=0.5) Teacher: ResNet18, Student: Light ResNet 18**



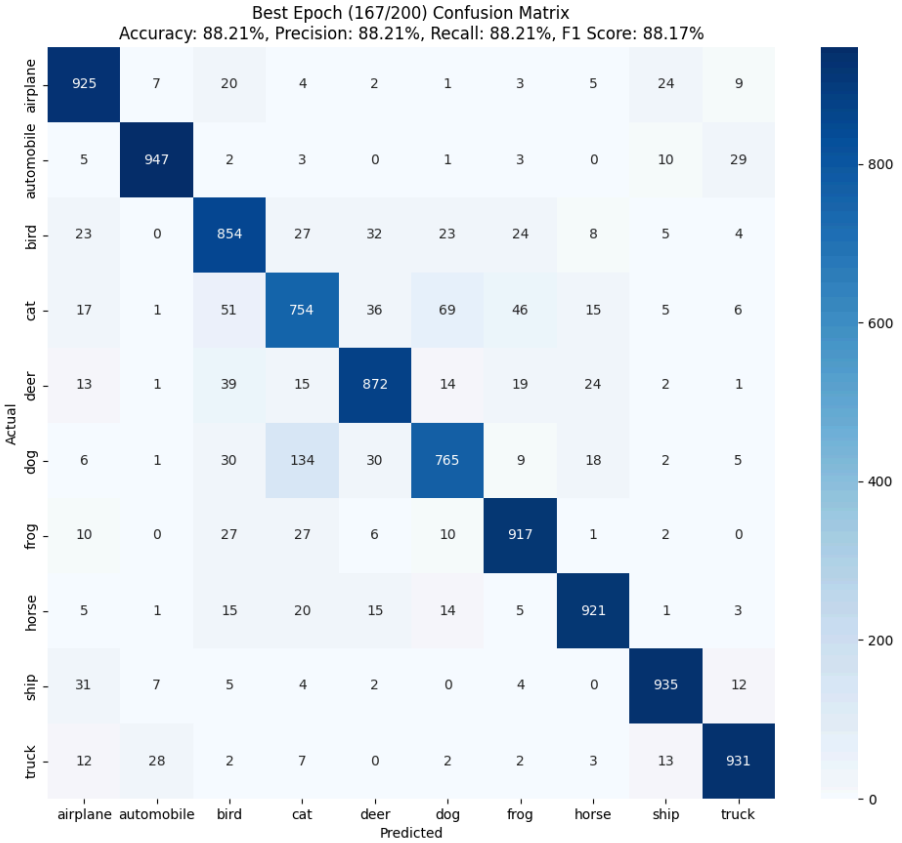
- **Knowledge Distillation (T=2, α=0.5, λ=0.5) Teacher: ResNet18, Student: Light ResNet 18**



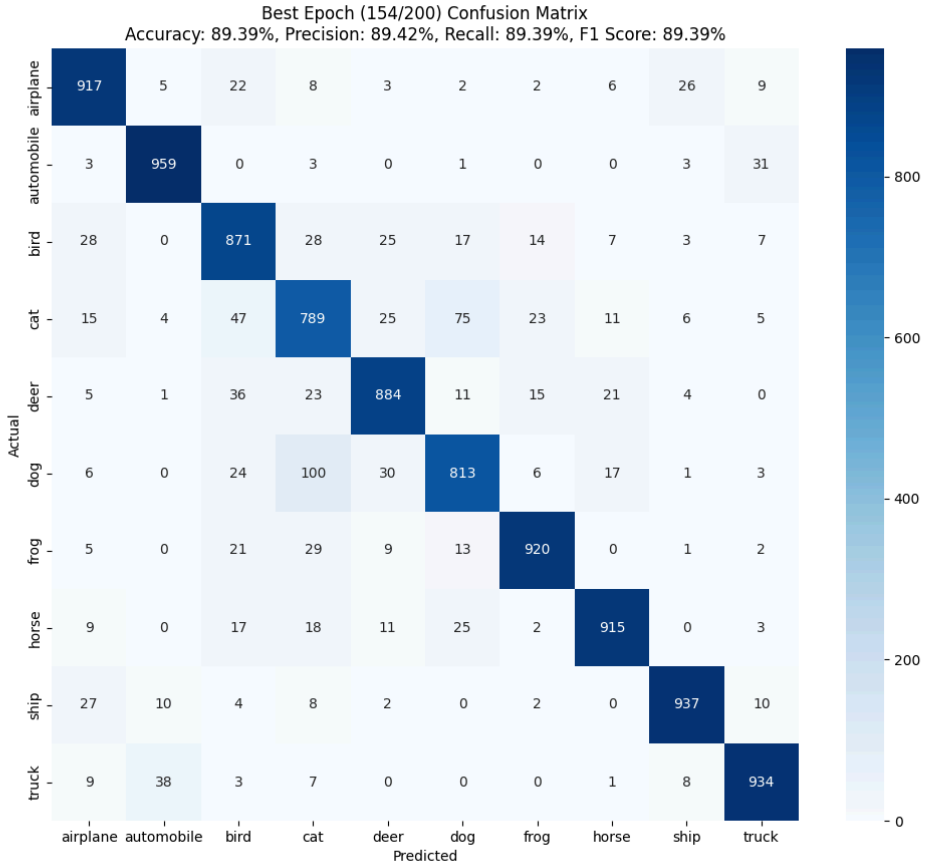
- **Knowledge Distillation (T=2.5, α=0.5, λ=0.5) Teacher: ResNet18, Student: Light ResNet 18**



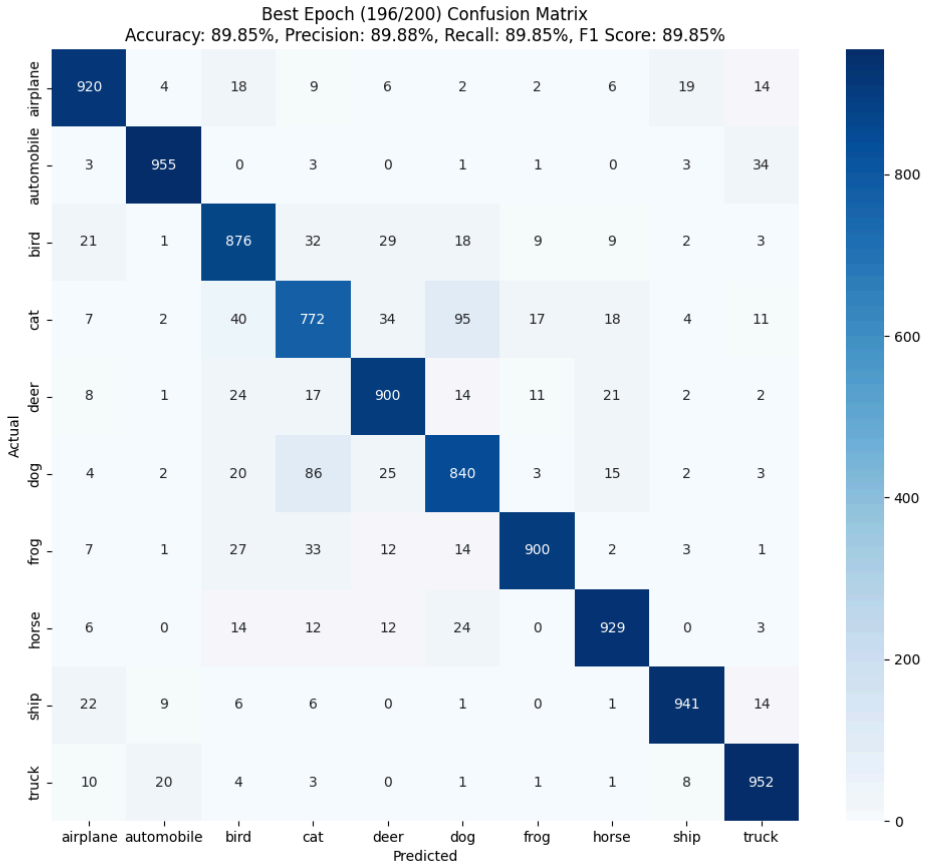
- **Knowledge Distillation (T=3, α=0.5, λ=0.5) Teacher: ResNet18, Student: Light ResNet 18**



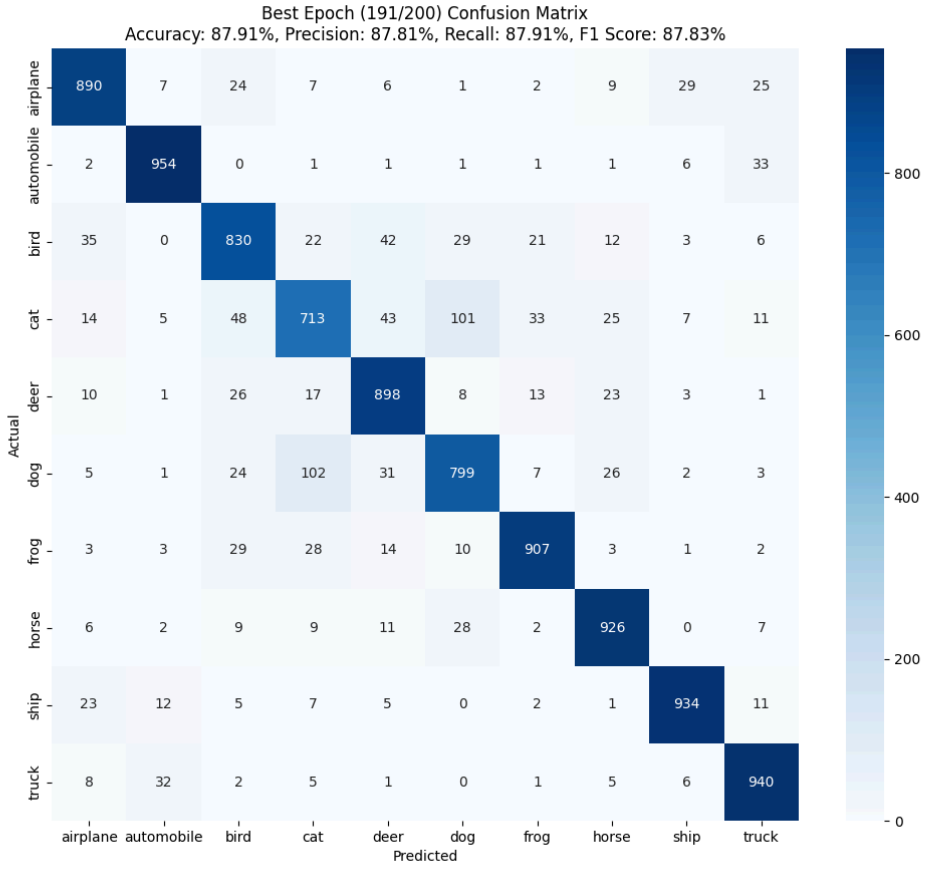
- **Knowledge Distillation (T=2, α=0.7, λ=0.3) Teacher: ResNet18, Student: ResNet18**



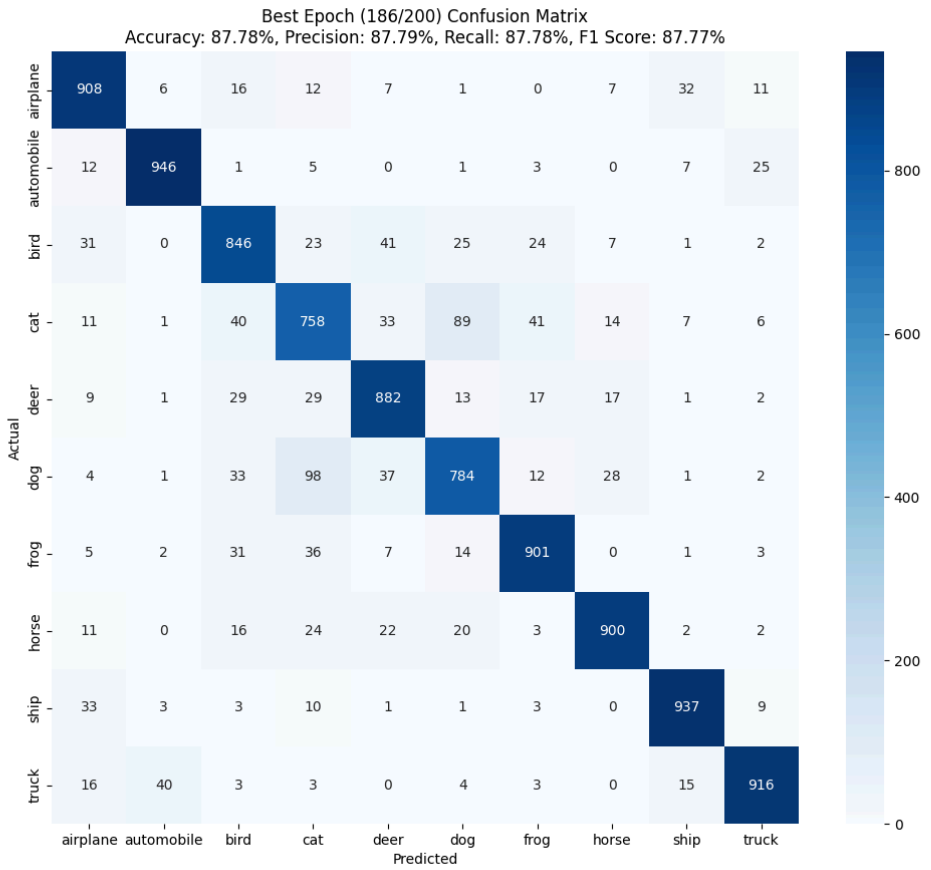
- **Knowledge Distillation (T=2, α=0.3, λ=0.7) Teacher: ResNet18, Student: ResNet18**



- **Knowledge Distillation (T=2, α=0.7, λ=0.3) Teacher: ResNet18, Student: Light ResNet 18**

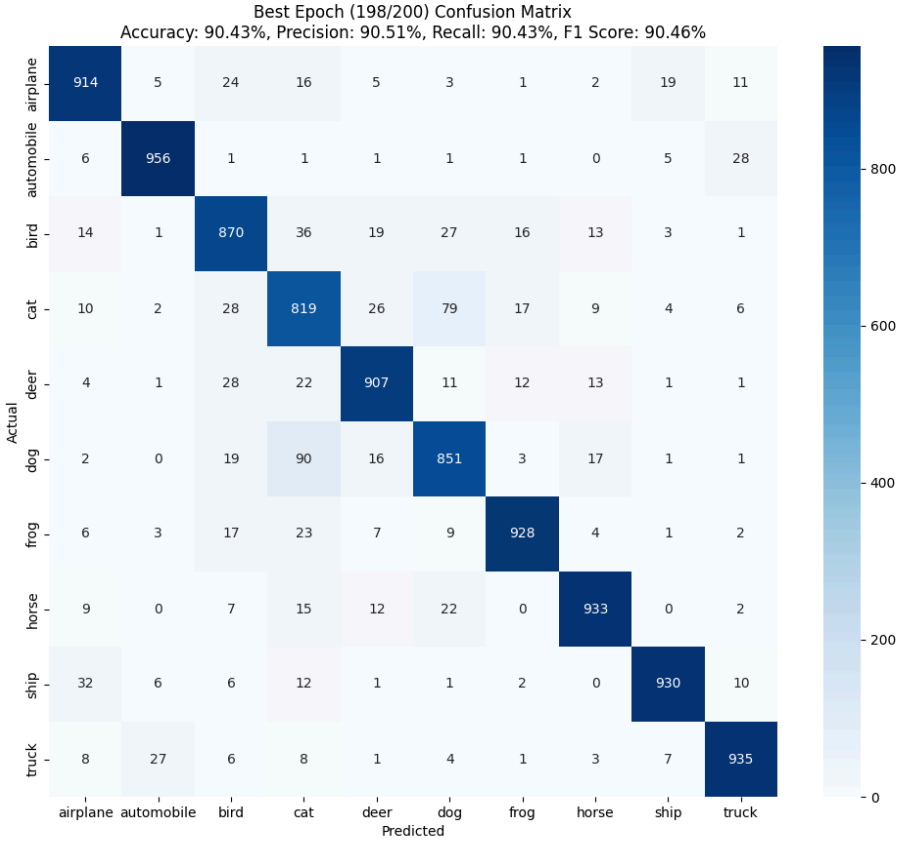


- **Knowledge Distillation (T=2, α=0.3, λ=0.7) Teacher: ResNet18, Student: Light ResNet 18**

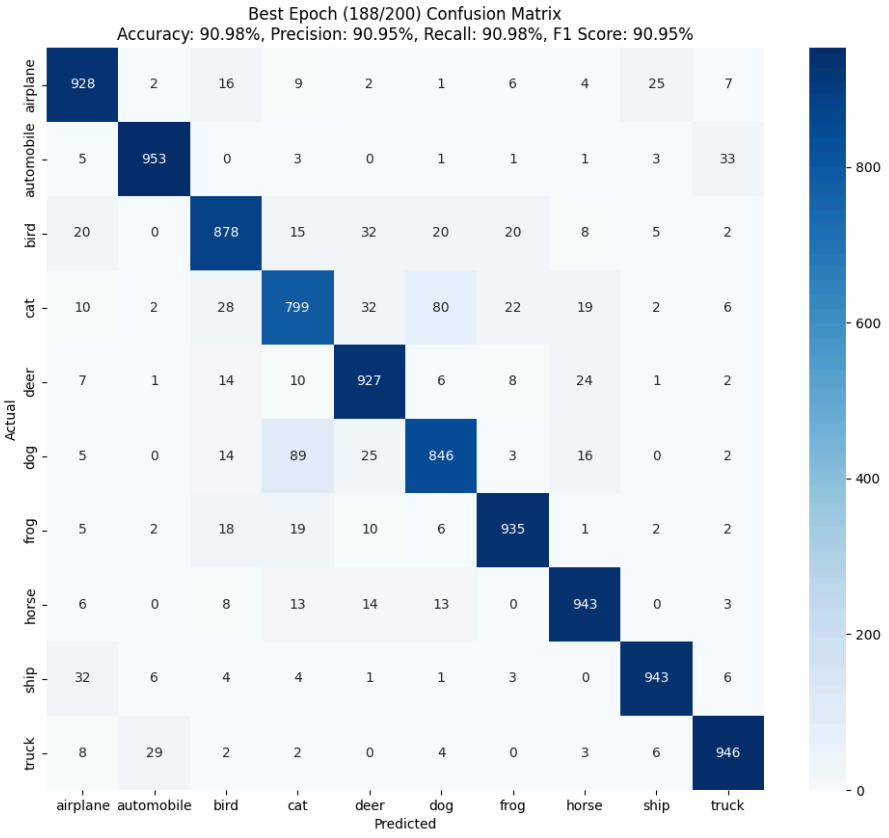


Adam, Batch size=64, lr=0.001 için:

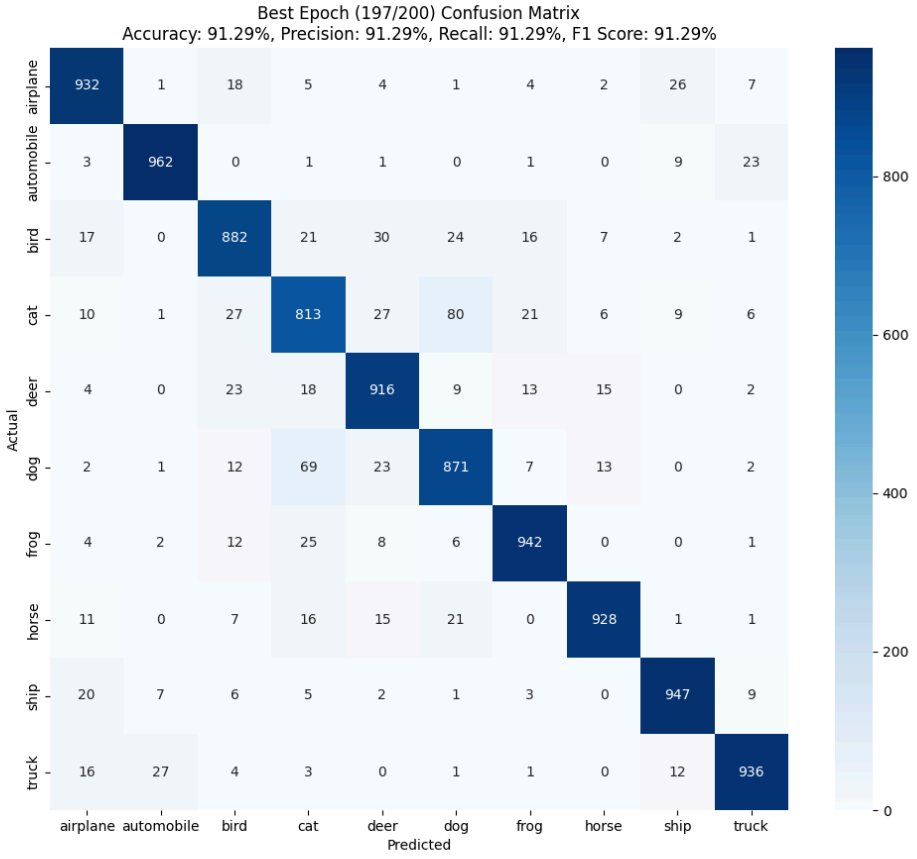
- **ResNet 18:**



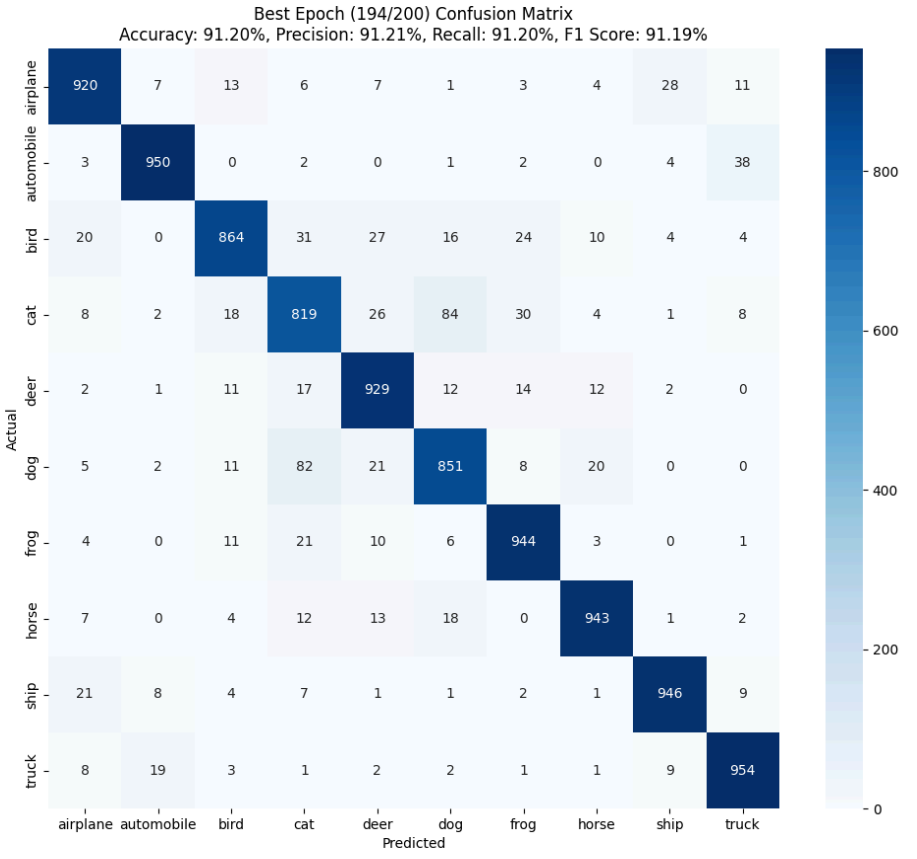
- **Knowledge Distillation (T=1.5, α=0.5, λ=0.5) Teacher: ResNet18, Student: ResNet18:**



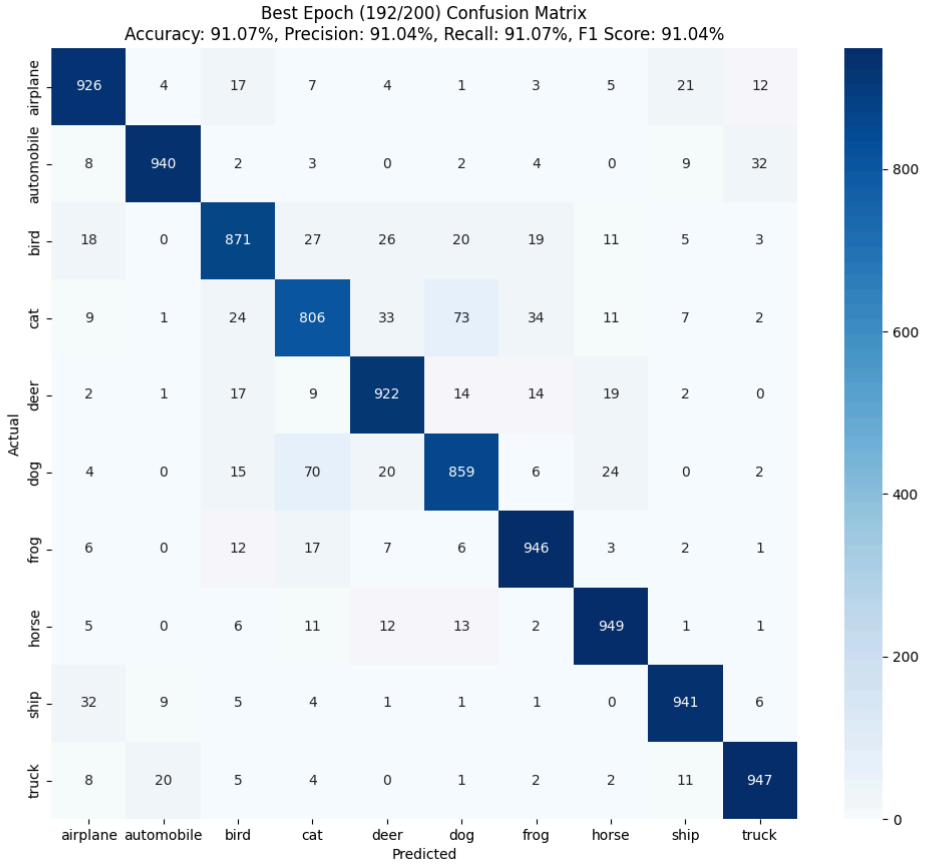
- **Knowledge Distillation (T=2, α=0.5, λ=0.5) Teacher: ResNet18, Student: ResNet18**



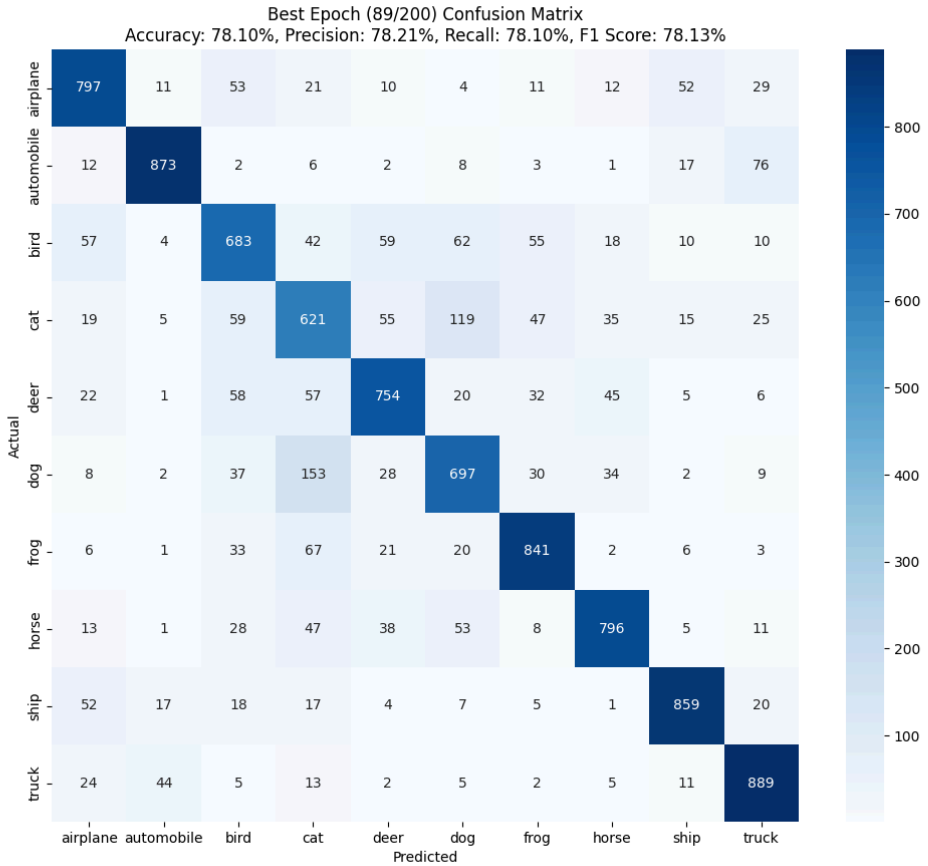
- **Knowledge Distillation (T=2.5, α=0.5, λ=0.5) Teacher: ResNet18, Student: ResNet18**



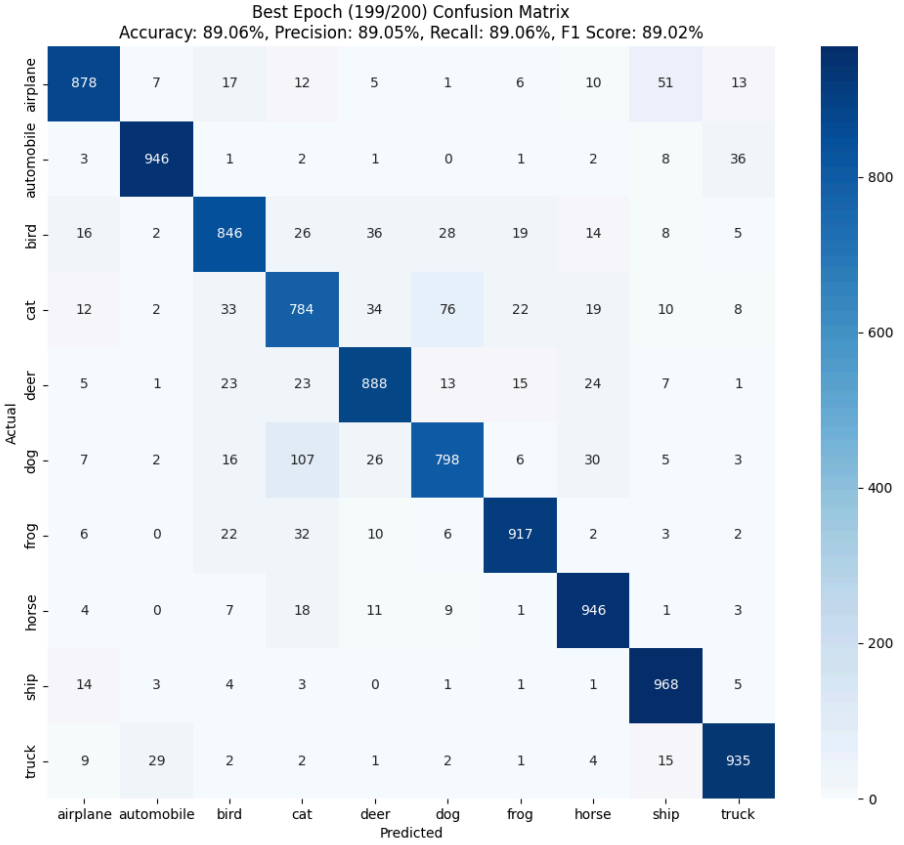
- **Knowledge Distillation (T=3, α=0.5, λ=0.5) Teacher: ResNet18, Student: ResNet18**



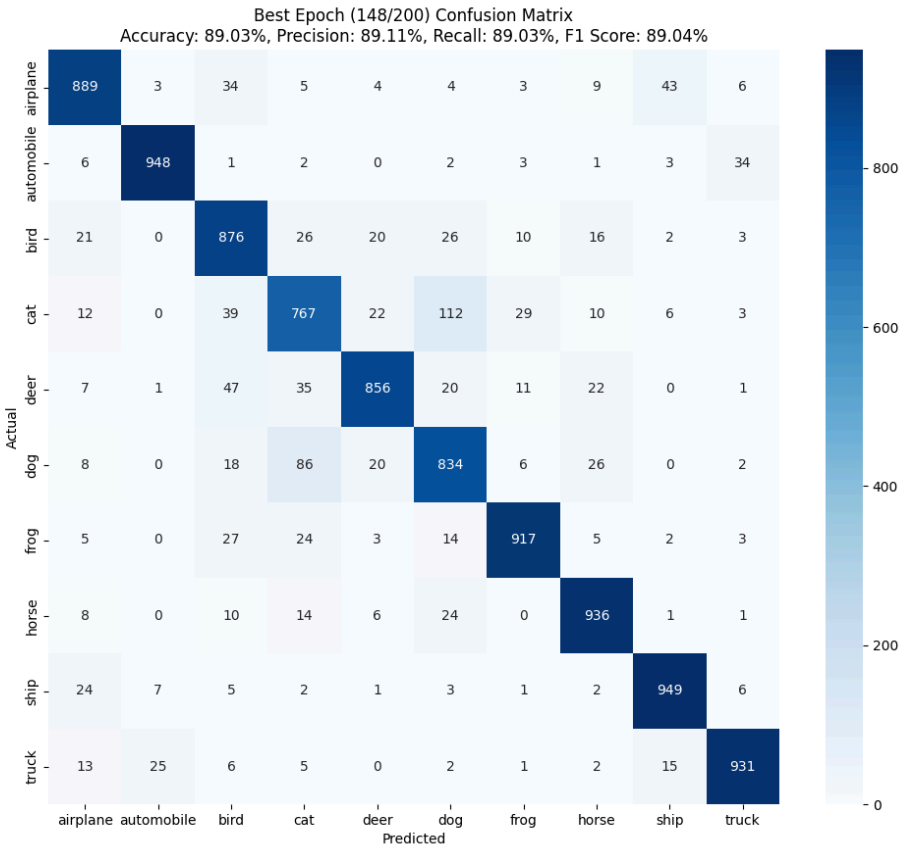
- **Light ResNet 18:**



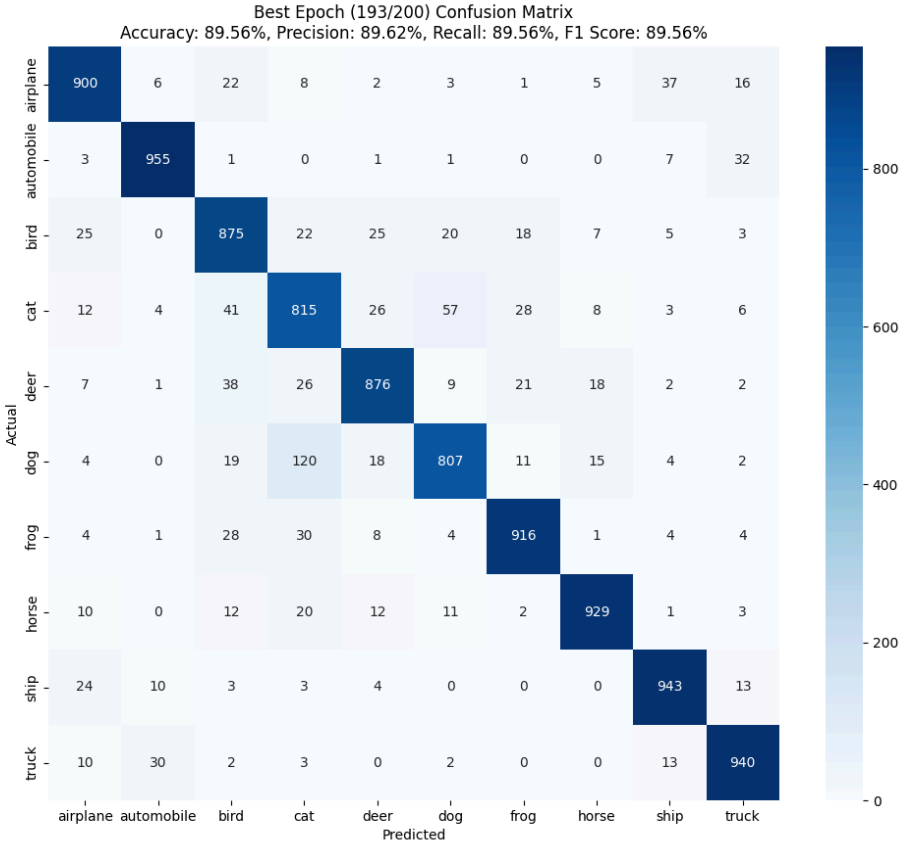
- **Knowledge Distillation (T=1.5, α=0.5, λ=0.5) Teacher: ResNet18, Student: Light ResNet 18**



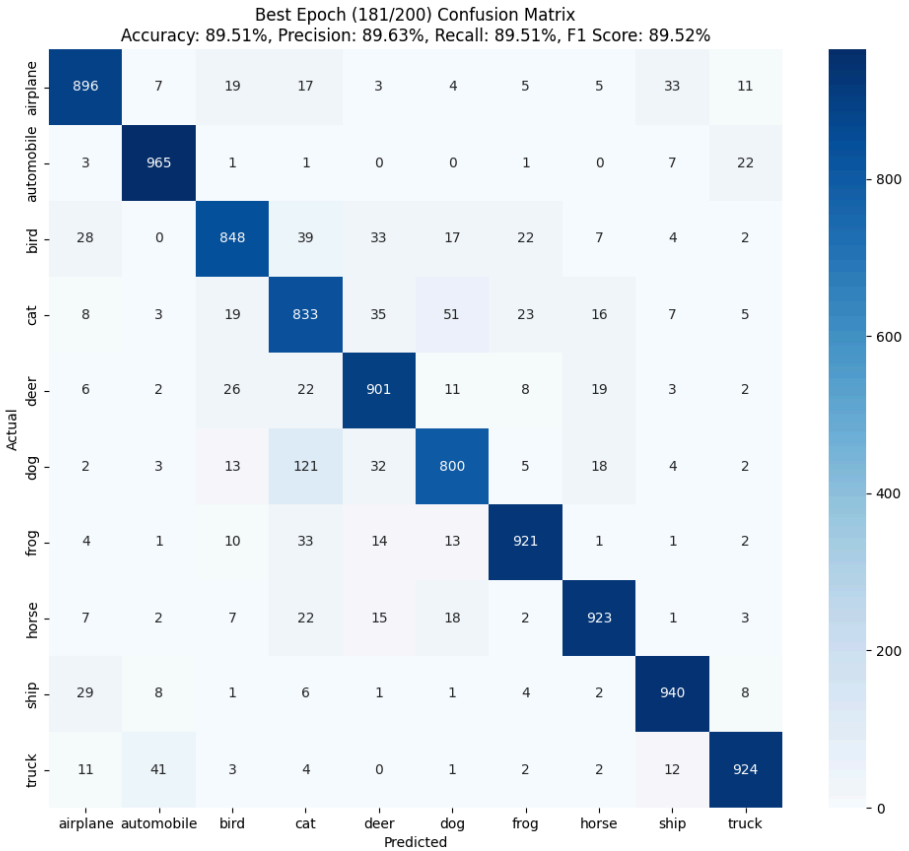
- **Knowledge Distillation (T=2, α=0.5, λ=0.5) Teacher: ResNet18, Student: Light ResNet 18**



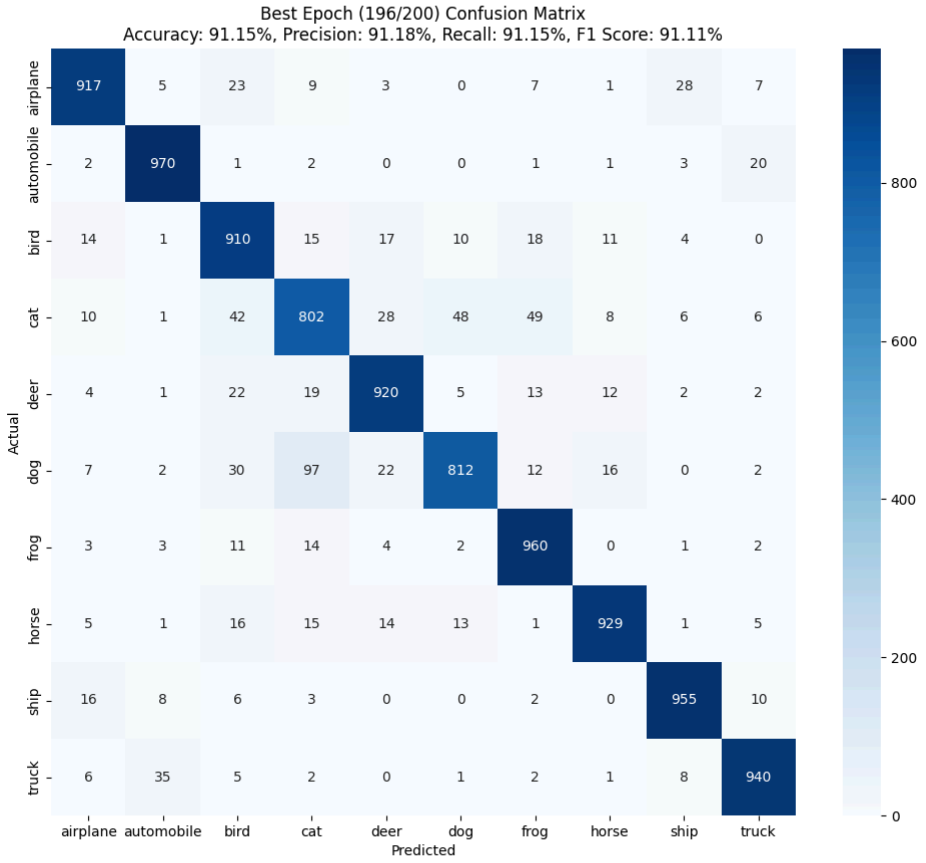
- **Knowledge Distillation (T=2.5, α=0.5, λ=0.5) Teacher: ResNet18, Student: Light ResNet 18**



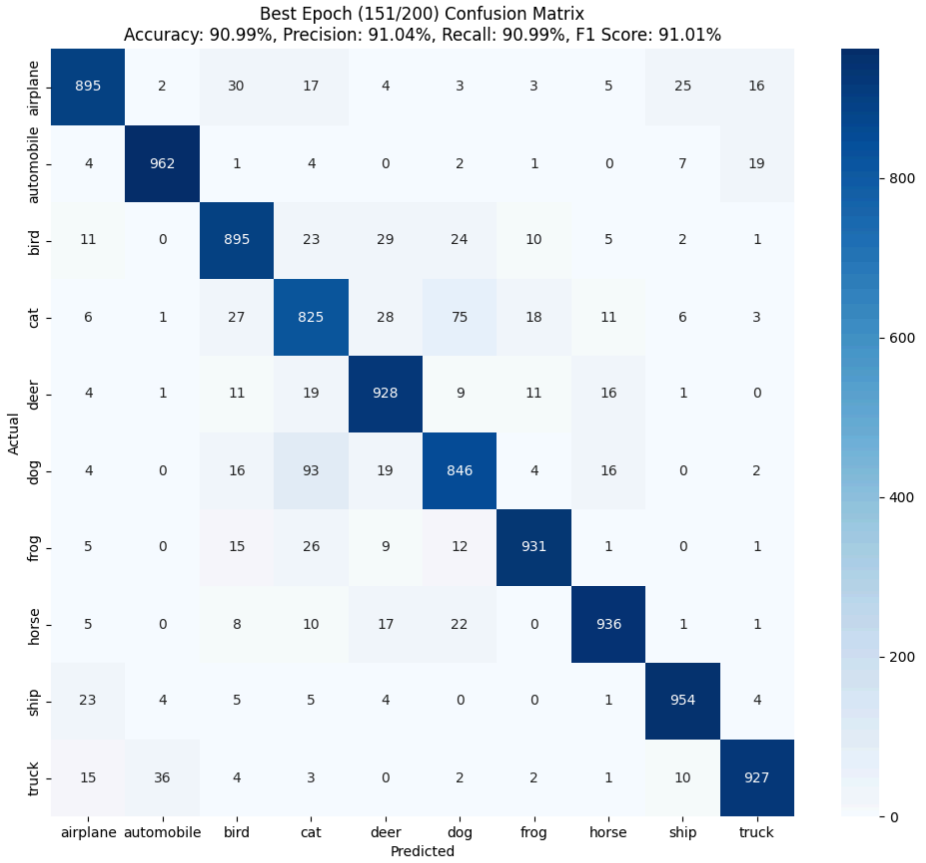
- **Knowledge Distillation (T=3, α=0.5, λ=0.5) Teacher: ResNet18, Student: Light ResNet 18**



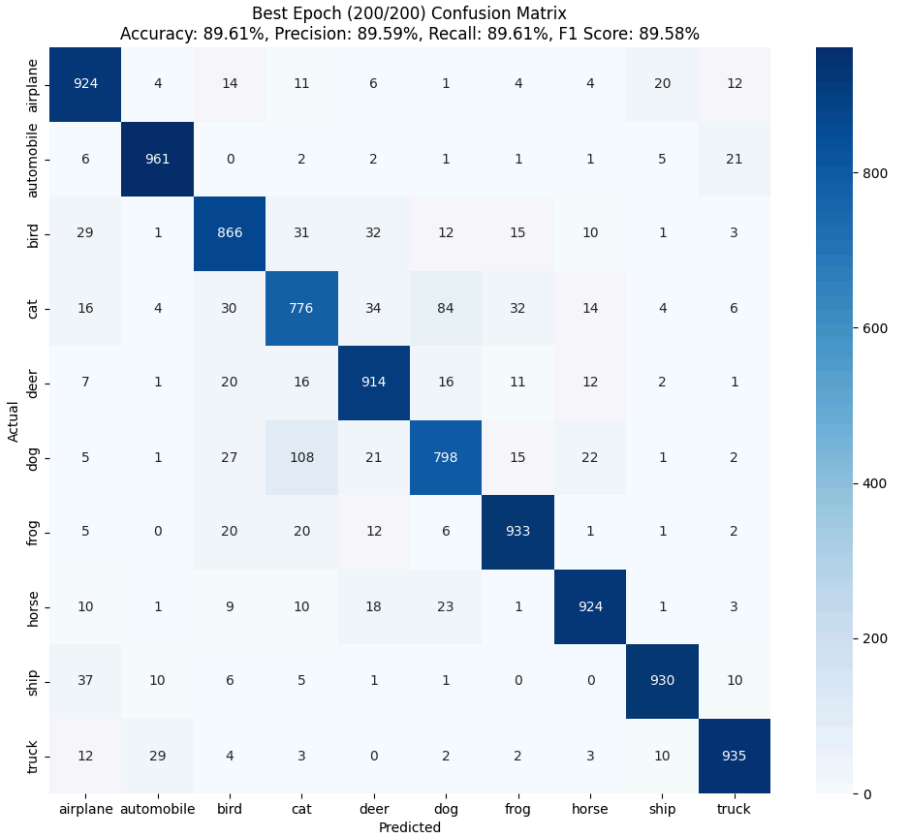
- **Knowledge Distillation (T=2, α=0.7, λ=0.3) Teacher: ResNet18, Student: ResNet18**



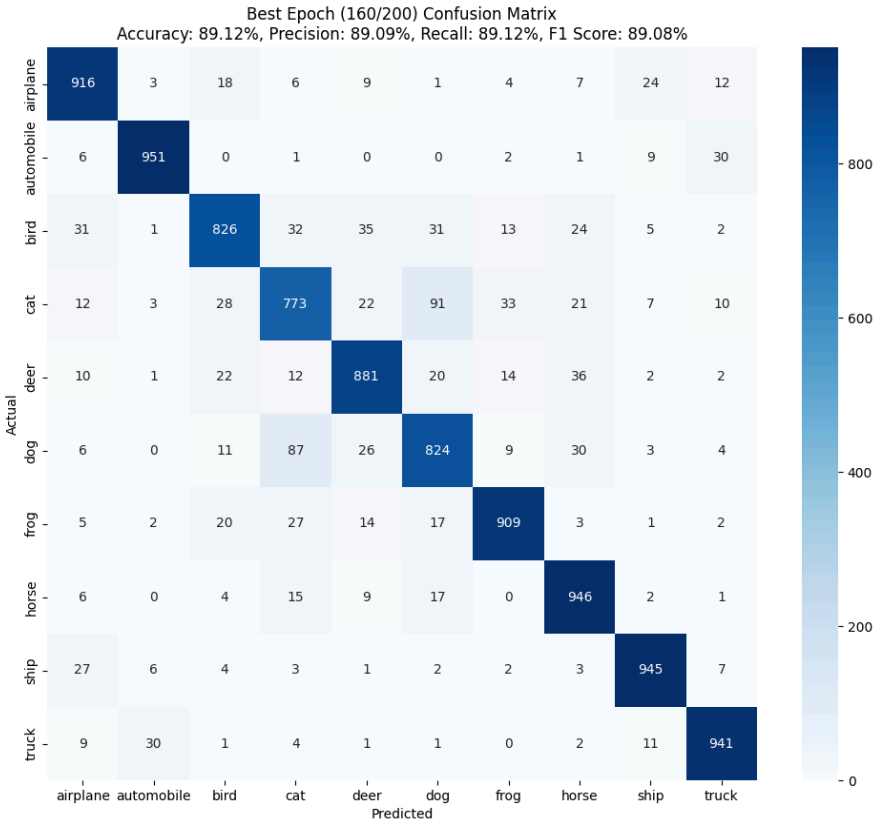
- **Knowledge Distillation (T=2, α=0.3, λ=0.7) Teacher: ResNet18, Student: ResNet18**



- **Knowledge Distillation (T=2, α=0.7, λ=0.3) Teacher: ResNet18, Student: Light ResNet 18**



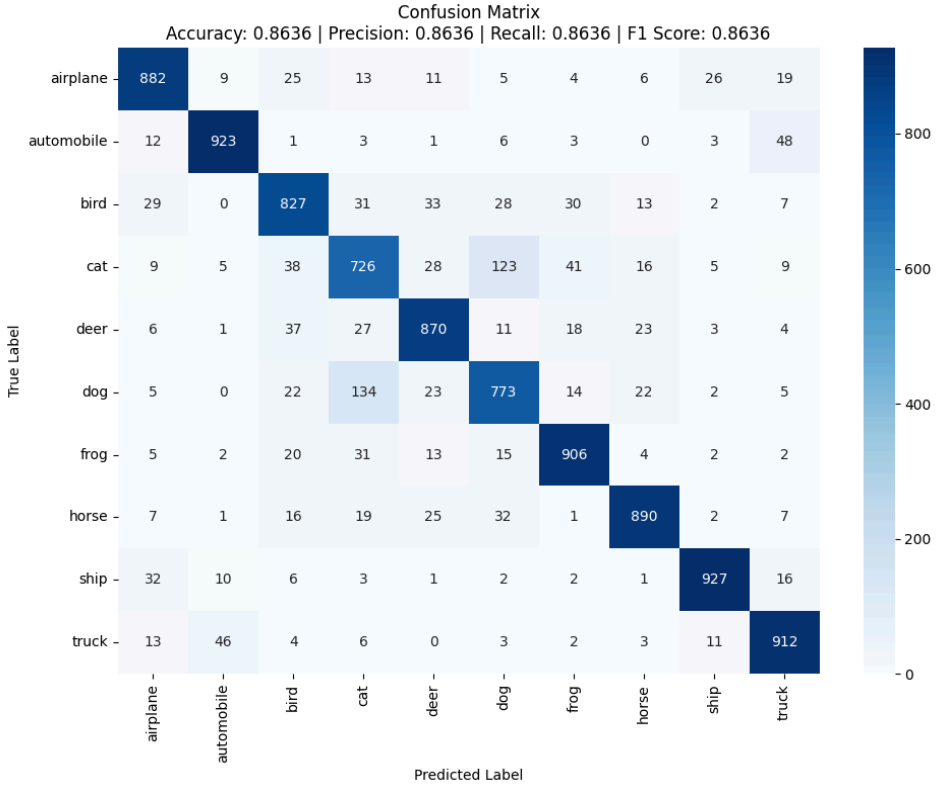
- **Knowledge Distillation (T=2, α=0.3, λ=0.7) Teacher: ResNet18, Student: Light ResNet 18**



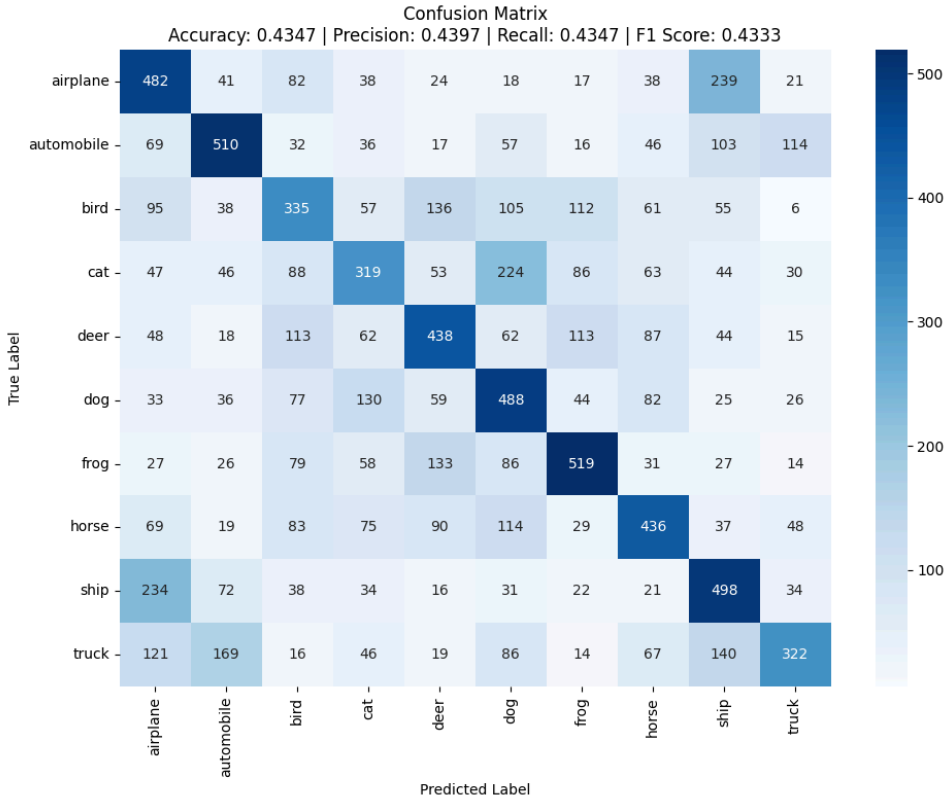
6. Transfer Learning Confision Matrisler:

<u>Adam, Batch size=128, lr=0.001 için:</u>

- **Transfer Learning (2,3,4. katmanlar açık):**

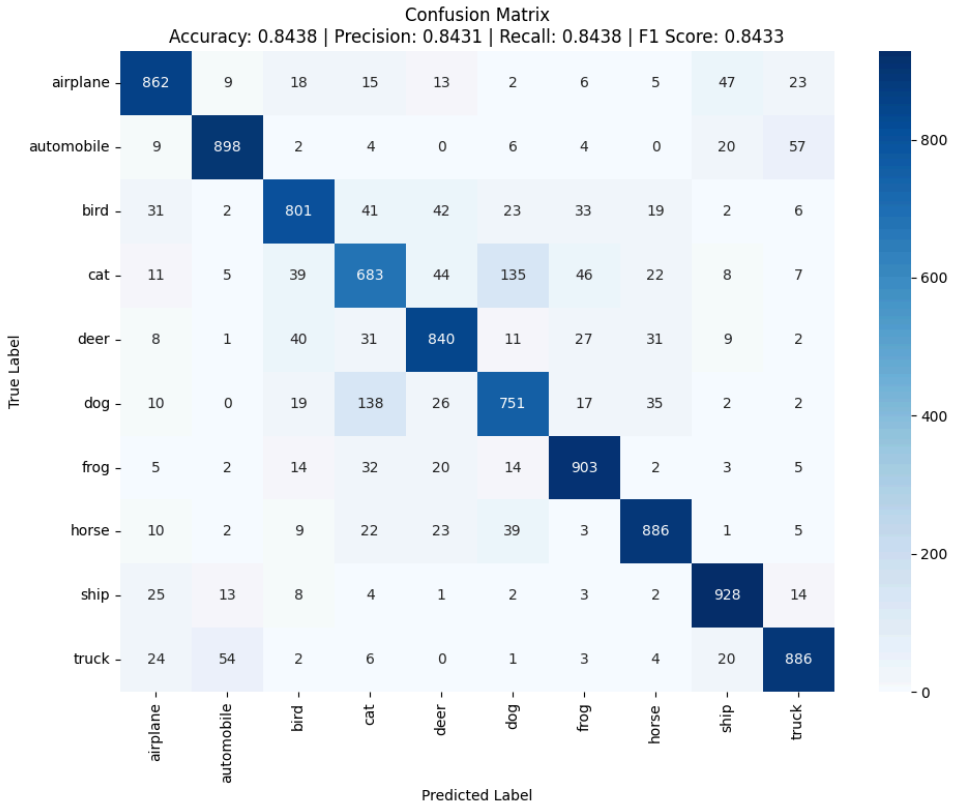


- **Transfer Learning (2,3,4. katmanlar kapalı):**

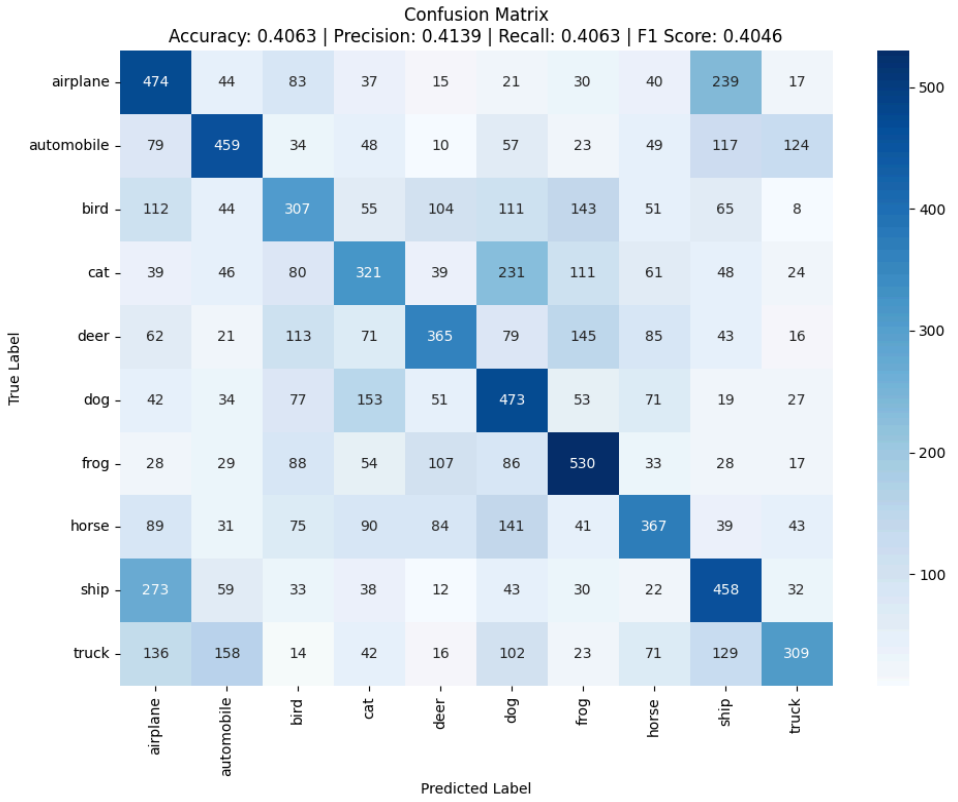


SGD, Batch size=128, lr=0.001 için:

- **Transfer Learning (2,3,4. katmanlar açık):**

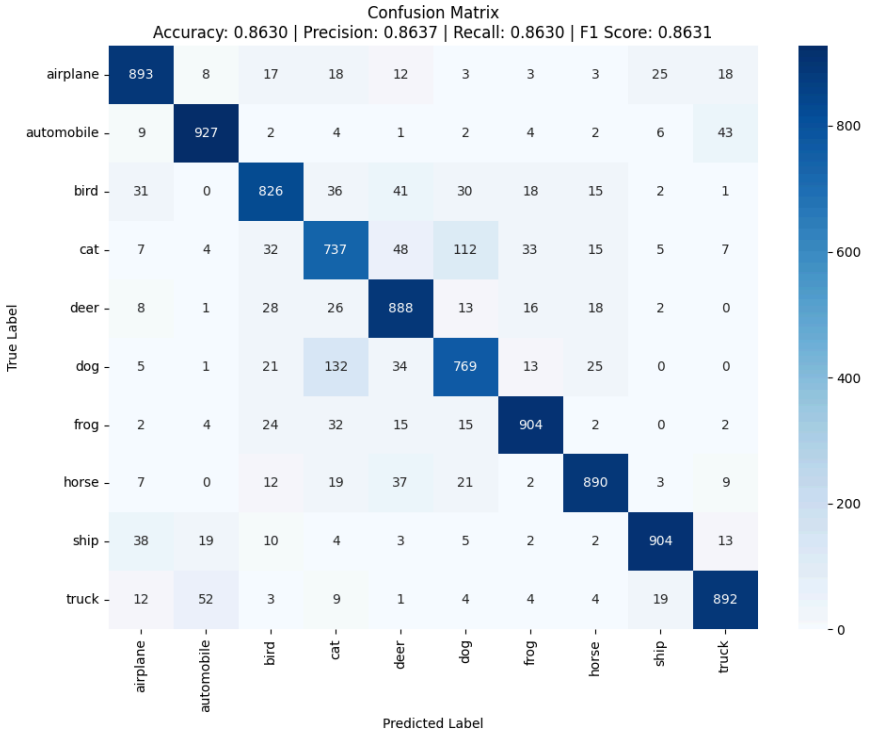


- **Transfer Learning (2,3,4. katmanlar kapalı):**



Adam, Batch size=64, lr=0.001 için:

- **Transfer Learning (2,3,4. katmanlar açık):**



- **Transfer Learning (2,3,4. katmanlar kapalı):**