

Unit Testing Coverage Report

This report serves as a standardized template for documenting the unit test coverage for the frontend application, incorporating dependencies on the main backend and the Machine Learning (ML) backend. The primary purpose of this document is to provide a clean, organized, and easily maintainable record of test results, requiring the user to only insert the corresponding screenshots of the coverage metrics.

1. Executive Summary

This section summarizes the overall health of the unit tests for the frontend codebase and its interaction points. The goal is to ensure a high level of code quality and stability across all integrated components.

Component	Coverage Goal	Achieved Coverage	Status
Main Backend Service Integration	100%	98.96	completed
ML Backend Service Integration	100%	94.83	completed
UI Components (Interactions)	100%	96.24	completed

2. Frontend Unit Testing Coverage

The following section is dedicated to displaying the coverage results specifically for the core frontend logic and UI components. Please insert the generated coverage report screenshot from the frontend testing framework (e.g., Jest/Cypress/Karma).

2.1 Frontend Component Coverage Screenshot

- Description:** Screenshot showing the line, branch, and function coverage percentages for all component frontend modules.

```

Test Files 16 passed (16)
Tests 214 passed (214)
Start at 13:57:48
Duration 10.49s (transform 4.77s, setup 5.21s, collect 12.53s, tests 35.48s, environment 31.46s, prepare 2.17s)

```

% Coverage report from v8

File	% Stmts	% Branch	% Funcs	% Lines	Uncovered Line #s
All files	96.24	87.25	97.53	97.31	
assets	0	0	0	0	
LoginPage.css	0	0	0	0	
components	97.95	88.74	98.74	98.69	
AllNews.jsx	100	88.6	100	100	...33-234,245,264-265,273,298-299
Bookmarks.jsx	97.43	81.81	100	98.63	79
CategoryNews.jsx	100	93.67	100	100	190,202,222,230,256
CategoryOnboarding.jsx	97.22	88.88	100	97.05	51
Default.png	0	0	0	0	
HelpSupport.jsx	100	95	100	100	63
LanguageSelector.jsx	100	100	100	100	
LoginPage.jsx	94.54	84.61	100	96.29	54,69
Navbar.jsx	97.05	77.77	100	100	...46-175,183,245,258-263,290-292
NewsCard.jsx	100	92.3	100	100	23
PersonalizedFeed.jsx	94.44	100	80	94.44	28
Profile.jsx	98.07	88.67	100	97.89	110-111
RecommendedArticles.jsx	100	100	100	100	
ReelCard.jsx	95.6	83.13	89.47	96.51	110,287-299
ReelView.jsx	98.57	85.18	100	100	19,46,57,85,89-128
SignUp.jsx	100	100	100	100	
SmartRecommendations.jsx	97.56	95.65	100	100	35,158-166

3. Main Backend Unit Testing

Unit tests for backend integration are crucial for verifying that the frontend correctly handles various API responses, including success, error, and loading states. This coverage is typically achieved through robust mocking of the main backend services.

- **Description:** Screenshot showing coverage for the service layer that interacts with the main backend APIs, primarily focusing on mock implementation coverage.
-

File	% Stmts	% Branch	% Funcs	% Lines	Uncovered Line #s
All files	98.96	88.73	100	98.92	
backend	96.05	79.24	100	95.89	
FetchingNews.js	94.73	66.66	100	94.59	81-82
Summarizing.js	97.36	85.71	100	97.22	93
backend/auth/controllers	98.03	96.55	100	97.72	
authController.js	96.55	96	100	95.83	38
emailController.js	100	100	100	100	
backend/services	100	90.55	100	100	
ArticleService.js	100	92.85	100	100	91-104
ProfileService.js	100	91.93	100	100	142-149,191,195-199
UserInteractionService.js	100	86.48	100	100	11,27,47,104,205
backend/services/youtube-service	100	100	100	100	
youtubeController.js	100	100	100	100	
youtubeService.js	100	100	100	100	

4. ML Backend Integration Unit Testing

Testing the integration with the ML backend ensures that asynchronous calls, payload formatting, and response handling for model-related tasks are correct. This coverage also relies heavily on service mocking.

Description: Screenshot showing the coverage for communicating with the ML backend (e.g., model prediction or training endpoints).

===== tests coverage =====				
coverage: platform darwin, python 3.13.5-final-0				
name	Stmts	Miss	Cover	Missing
backend/ML_model/Recommender_Models.py	165	9	95%	230, 261, 321-331
backend/ML_model/Retrain_scheduler.py	83	1	99%	142
backend/ML_model/Train_modules.py	186	150	19%	46-98, 102-123, 127-188, 192-321, 325-335, 339-364, 369-371, 375
backend/ML_model/__init__.py	0	0	100%	
backend/ML_model/api_server.py	144	13	91%	200, 322-336
backend/ML_model/cache_manager.py	118	12	90%	185-203
backend/ML_model/quickstart.py	52	3	94%	37-38, 75
backend/__init__.py	0	0	100%	
backend/_tests_/test_Retrain_scheduler.py	143	0	100%	
backend/_tests_/test_api_server.py	181	0	100%	
backend/_tests_/test_cache_manager.py	164	0	100%	
backend/_tests_/test_quickstart.py	82	2	98%	96, 142
backend/_tests_/test_recommender_models.py	297	0	100%	
backend/_tests_/test_setup.py	2	0	100%	
TOTAL	1617	190	88%	

– Screenshots of the improvements done throughout the unit testing of frontend : (through vitest)

Failed Tests 1

FAIL src/test/Navbar.test.jsx > Navbar Component > focus and blur change the input styles when logged in

AssertionError: expected 'rgb(229, 231, 235)' to be '#e5e7eb' // Object.is equality

Expected: "#e5e7eb"

Received: "rgb(229, 231, 235)"

> src/test/Navbar.test.jsx:195:37

```
193|  
194|   fireEvent.blur(input);  
195|   expect(input.style.borderColor).toBe('#e5e7eb');  
    |                                   ^  
196| });  
197|
```

[1/1]

- > src/test/Bookmarks.test.jsx 4/10
- > src/test/CategoryNews.test.jsx 0/11
- > src/test/CategoryOnboarding.test.jsx 0/7
- > src/test/HelpSupport.test.jsx 0/7
- > src/test/LanguageSelector.test.jsx 1/9
- > src/test/LoginPage.test.jsx 0/12
- > src/test/Navbar.test.jsx 3/6
- > src/test/Navbar.test.jsx (6 tests | 1 failed) 528ms
 - ✗ renders Logo and Categories (Desktop) 207ms
 - ✓ navigates when a category is clicked 66ms
 - ✓ toggles Mobile Sidebar visibility 133ms
 - ✓ opens Profile Sidebar on User Icon click (Desktop) 44ms
 - ✓ opens Profile Sidebar on Profile Nav click (Mobile) 37ms
 - ✓ calls onLoginClick when guest clicks search 38ms

```
> getMultipleElementsFoundError node_modules/@testing-library/dom/dist/query-helpers.js:23:10  
> node_modules/@testing-library/dom/dist/query-helpers.js:55:13  
> node_modules/@testing-library/dom/dist/query-helpers.js:95:19  
> src/test/Sidebar.test.jsx:301:28  
299|   render(<Sidebar userProfile={mockUserProfile} />);  
300|   fireEvent.click(screen.getByLabelText('Toggle profile and settings'));  
301|   fireEvent.click(screen.getByText('Open'));  
    |                                   ^  
302|  
303|   const editBtns = screen.getAllByText('Edit');
```

Test Files 2 failed (2)
Tests 15 failed | 9 passed (24)
Start at 04:17:22
Duration 888ms

FAIL Tests failed. Watching for file changes...
press h to show help, press q to quit

□

```

      <input
        aria-label="Search headlines"
        class="w-full px-3 py-1.5 pr-9 border border-gray-200 rounded-lg outlin...
    > Object.getElementError node_modules/@testing-library/dom/dist/config.js:37:19
    > node_modules/@testing-library/dom/dist/query-helpers.js:76:38
    > node_modules/@testing-library/dom/dist/query-helpers.js:52:17
    > node_modules/@testing-library/dom/dist/query-helpers.js:95:19
    > src/test/SideBar.test.jsx:327:31
      325|     // Find the switch button (sibling of "Notifications" text)
      326|     // Since we mocked Lucide 'Bell' as <span>Bell</span>
      327|     const notifLabel = screen.getByText('Notifications');
          |                               ^
      328|     const switchBtn = notifLabel.closest('div').nextSibling; // Based on ToggleSwitch JSX structure
      329|

```

Test Files **2 failed** (2)
 Tests **16 failed** | **9 passed** (25)
 Start at 04:15:03
 Duration 967ms

FAIL Tests failed. Watching for file changes...
 press **h** to show help, press **q** to quit

```

✓ src/test/SmartRecommendations.test.jsx (9 tests) 181ms
✓ SmartRecommendations Component (9)
  ✓ returns NULL if userId is missing 23ms
  ✓ renders Loading state correctly 35ms
  ✓ renders Error/Empty state correctly 9ms
  ✓ renders Recommendations list on success 37ms
  ✓ handles Refresh button click 17ms
  ✓ handles Analytics Toggle button 18ms
  ✓ handles Article Click 10ms
  ✓ renders Analytics Data correctly 21ms
  ✓ renders 0s for empty time analysis 9ms

```

Test Files **1 failed** | **1 passed** (2)
 Tests **6 failed** | **15 passed** (21)
 Start at 04:10:21
 Duration 490ms

[9/10]-

FAIL src/test/SideBar.test.jsx > SideBar Component > toggles notifications

TestingLibraryElementError: Unable to find an element with the text: Notifications. This could be because the text is broken up by multiple elements. In this case, you can provide a function for your text matcher to make your matcher more flexible.

Ignored nodes: comments, script, style

```
<body>
  <div>
    <nav
      class="fixed top-0 left-0 right-0 z-30 bg-white shadow-sm border-b border-gray-200"
    >
      <div
        class="flex items-center h-16 px-4 lg:px-6 gap-3 lg:gap-4"
      >
        <a
          class="flex items-center transition-transform duration-200 hover:scale-105 shrink-0"
          href="/"
        >
```

✓ handles Article Click 12ms

x renders Analytics Data correctly 43ms

✓ renders 0s for empty time analysis 15ms

Failed Tests 1

FAIL src/test/SmartRecommendations.test.jsx > SmartRecommendations Component > renders Analytics Data correctly

TestingLibraryElementError: Unable to find an element with the text: 1h 1m 5s. This could be because the text is broken up by multiple elements. In this case, you can provide a function for your text matcher to make your matcher more flexible.

Ignored nodes: comments, script, style

```
<body>
  <div>
    <div
      class="my-8 px-4"
    >
```

/* assert on the output */

This ensures that you're testing the behavior the user would see in the browser. Learn more at <https://react.dev/link/wrap-tests-with-act>

> src/test/SmartRecommendations.test.jsx (9 tests | 1 failed) 253ms

> SmartRecommendations Component (9)

✓ returns NULL if userId is missing 34ms

✓ renders Loading state correctly 63ms

✓ renders Error/Empty state correctly 9ms

✓ renders Recommendations list on success 40ms

✓ handles Refresh button click 16ms

✓ handles Analytics Toggle button 15ms

✓ handles Article Click 12ms

x renders Analytics Data correctly 43ms

✓ renders 0s for empty time analysis 15ms

Failed Tests 1

RERUN src/test/ReelView.test.jsx x4

- ✓ src/test/ReelView.test.jsx (10 tests) 389ms
 - ✓ ReelView Component (10)
 - ✓ locks body scroll on mount and unlocks on unmount 49ms
 - ✓ renders the correct initial card 23ms
 - ✓ navigates NEXT on scroll down 174ms
 - ✓ navigates PREV on scroll up 28ms
 - ✓ stops guest user at index 5 (6th item) 31ms
 - ✓ allows logged-in user to scroll past limit 19ms
 - ✓ handles swipe UP (Next) 21ms
 - ✓ handles swipe DOWN (Prev) 18ms
 - ✓ pauses audio players and closes on button click 7ms
 - ✓ blocks scrolling when child overlay is open 16ms

Test Files 1 passed (1)
Tests 10 passed (10)
Start at 03:56:08
Duration 686ms

PASS Waiting for file changes...
press **h** to show help, press **q** to quit

□

- ✓ src/test/AllNews.test.jsx (6 tests) 150ms
 - ✓ AllNews Component (6)
 - ✓ renders loading state initially 43ms
 - ✓ renders news cards and limits to 6 for guest users 34ms
 - ✓ shows "View More" button for guests and handles click 17ms
 - ✓ renders ALL news cards for logged-in users 14ms
 - ✓ opens ReelView when a card is clicked and closes it 21ms
 - ✓ handles API fetch failure gracefully 19ms

Test Files 1 passed (1)
Tests 6 passed (6)
Start at 21:18:36
Duration 1.27s (transform 113ms, setup 108ms, collect 195ms, tests 150ms, environment 556ms, prepare 42ms)

% Coverage report from v8

File	% Stmts	% Branch	% Funcs	% Lines	Uncovered Line #s
All files	100	65.95	100	100	
AllNews.jsx	100	65.95	100	100	48-60,62-66,69-72,152,169

PS D:\Projects\News_Aggregator_IT314\NewsXpress\frontend> start d:\Projects\News_Aggregator_IT314\NewsXpress\frontend\coverage\index.
PS D:\Projects\News_Aggregator_IT314\NewsXpress\frontend> npm run coverage

> frontend@0.0.0 coverage
> vitest run --coverage

Failed Tests 1

FAIL src/test/ReelView.test.jsx > ReelView Component > blocks scrolling when child overlay is open

Error: Cannot find module '../components/ReelCard'

Require stack:

- D:\Projects\News_Aggregator_IT314\NewsXpress\frontend\src\test\ReelView.test.jsx

> src/test/ReelView.test.jsx:176:15

```
174|     // 1. Capture the setChildOverlayOpen function
175|     let setOverlay;
176|     vi.mocked(require('../components/ReelCard').default).mockImplementation(
    |               ^
177|     ({ onOverlayChange, title }) => {
178|       setOverlay = onOverlayChange;
```

Test Files 1 failed (1)
Tests 1 failed | 9 passed (10)
Start at 03:53:51
Duration 736ms

FAIL Tests failed. Watching for file changes...
press **h** to show help, press **q** to quit

█

RERUN src/test/ReelCard.test.jsx x3

✓ src/test/ReelCard.test.jsx (16 tests) 482ms
✓ ReelCard Component (16)
✓ renders article content correctly 70ms
✓ renders TRANSLATED content if isTranslated is true 12ms
✓ renders Default Image on Error 216ms
✓ registers audio player ref on mount 7ms
✓ pauses audio when card becomes inactive 8ms
✓ shows loading spinner when fetching audio 7ms
✓ handles Listen Click (Auth Guard) 13ms
✓ handles Listen Click (Success) 6ms
✓ handles Translate Click (Auth Guard) 9ms
✓ opens Language Selector and handles selection 7ms
✓ notifies parent on overlay change 6ms
✓ handles Bookmark Click (Auth Guard) 5ms
✓ opens Bookmark Modal on click (Add) 40ms
✓ removes Bookmark if already bookmarked 29ms
✓ saves Bookmark with Note 33ms
✓ closes Bookmark Modal on Cancel 11ms

Test Files 1 passed (1)
Tests 16 passed (16)
Start at 03:51:35
Duration 827ms

PASS Waiting for file changes...
press **h** to show help, press **q** to quit

█

RERUN src/test/ReelCard.test.jsx x2

```
> src/test/ReelCard.test.jsx (16 tests | 3 failed) 421ms
  > ReelCard Component (16)
    ✓ renders article content correctly 59ms
    ✓ renders TRANSLATED content if isTranslated is true 9ms
    ✓ renders Default Image on Error 222ms
    ✓ registers audio player ref on mount 14ms
    ✓ pauses audio when card becomes inactive 8ms
    ✓ shows loading spinner when fetching audio 5ms
    ✓ handles Listen Click (Auth Guard) 12ms
    ✓ handles Listen Click (Success) 6ms
    ✓ handles Translate Click (Auth Guard) 9ms
    ✓ opens Language Selector and handles selection 8ms
    ✓ notifies parent on overlay change 6ms
    ✓ handles Bookmark Click (Auth Guard) 4ms
    ✗ opens Bookmark Modal on click (Add) 25ms
    ✓ removes Bookmark if already bookmarked 12ms
    ✗ saves Bookmark with Note 11ms
    ✗ closes Bookmark Modal on Cancel 8ms
```

Failed Tests 3

RERUN src/test/RecommendedArticles.test.jsx x1

```
✓ src/test/RecommendedArticles.test.jsx (7 tests) 72ms
  ✓ RecommendedArticles Component (7)
    ✓ returns NULL if currentArticleId is missing 17ms
    ✓ renders LOADING state (Skeleton UI) 19ms
    ✓ returns NULL if Error occurs 2ms
    ✓ returns NULL if Recommendations are empty 1ms
    ✓ renders list of recommendations with default title 18ms
    ✓ renders with custom title 3ms
    ✓ handles Article Click (Tracking) 9ms
```

Test Files 1 passed (1)

Tests 7 passed (7)

Start at 03:44:16

Duration 291ms

PASS Waiting for file changes...

press **h** to show help, press **q** to quit

□

Failed Tests 3

FAIL src/test/ReelCard.test.jsx > ReelCard Component > opens Bookmark Modal on click (Add)
TestingLibraryElementError: Unable to find an element with the placeholder text of: /Add a private note/i

Ignored nodes: comments, script, style

```
<body>
  <div>
    <article
      class="relative h-full w-full bg-gray-900 text-white flex items-center justify-center"
    >
```

FAIL src/test/ReelCard.test.jsx > ReelCard Component > saves Bookmark with Note
TestingLibraryElementError: Unable to find a label with the text of: Add bookmark

Ignored nodes: comments, script, style

```
<body>
  <div>
    <article
      class="relative h-full w-full bg-gray-900 text-white flex items-center justify-center"
    >
```

Failed Tests 2

FAIL src/test/Profile.test.jsx > Profile Component > checks availability and saves valid username

Error: Test timed out in 5000ms.

If this is a long-running test, pass a timeout value as the last argument or configure it globally with "testTimeout".

> src/test/Profile.test.jsx:123:3

```
121|   // --- 4. EDIT USERNAME TESTS (Complex - Uses Timers) ---
122|
123|   it('checks availability and saves valid username', async () => {
    |   ^
124|     // ENABLE FAKE TIMERS JUST FOR THIS TEST
125|     vi.useFakeTimers();
```

[1/2]-

FAIL src/test/Profile.test.jsx > Profile Component > shows error if username is taken

Error: Test timed out in 5000ms.

If this is a long-running test, pass a timeout value as the last argument or configure it globally with "testTimeout".

> src/test/Profile.test.jsx:156:3

```
154|   });
155|
156|   it('shows error if username is taken', async () => {
    |   ^
157|     vi.useFakeTimers(); // Enable fake timers
158|
```

js:1468:8)

at runFiles (file:///D:/Projects/News_Aggregator_IT314/NewsXpress/frontend/node_modules/@vitest
js:1526:3)

> src/test/Profile.test.jsx (11 tests | 5 failed) 20306ms

> Profile Component (11)

- ✗ renders user profile information correctly 49ms
- ✓ renders Guest User state if no profile 9ms
- ✓ navigates to Bookmarks 15ms
- ✓ navigates to Personalized Feed 9ms
- ✓ navigates to Help & Support 8ms
- ✗ edits and saves Full Name successfully 5013ms
- ✗ checks availability and saves valid username 5007ms
- ✗ shows error if username is taken 5003ms
- ✓ prevents saving empty username 12ms
- ✓ toggles notifications switch 171ms
- ✗ handles API error during update 5007ms

Failed Tests 5

FAIL src/test/Profile.test.jsx > Profile Component > renders user profile information correctly

TestingLibraryElementError: Found multiple elements with the text: Test User

x handles API error during update 5007ms

Failed Tests 5

FAIL src/test/Profile.test.jsx > Profile Component > renders user profile information correctly
TestingLibraryElementError: Found multiple elements with the text: Test User

Here are the matching elements:

Ignored nodes: comments, script, style

```
<p
  class="font-bold text-gray-900 text-base"
>
  Test User
</p>
```

Ignored nodes: comments, script, style

```
<div
  class="text-sm text-gray-700"
>
  Test User
</div>
```

(If this is intentional, then use the `*AllBy*` variant of the query (like `queryAllByText`, `getAllByText`, or `findAllByText`)).

Ignored nodes: comments, script, style

```
<body>
  <div>
```

FAIL src/test/Profile.test.jsx > Profile Component > checks availability and saves valid username

Error: Test timed out in 5000ms.

If this is a long-running test, pass a timeout value as the last argument or configure it globally with "testTimeout".

> src/test/Profile.test.jsx:132:3

```
130| // --- 4. EDIT USERNAME TESTS (Complex) ---
131|
132| it('checks availability and saves valid username', async () => {
    | ^
133|   api.checkUsernameAvailability.mockResolvedValue({ available: true });
134|   api.updateProfile.mockResolvedValue(true);
```

[3/5]

FAIL src/test/Profile.test.jsx > Profile Component > shows error if username is taken

Error: Test timed out in 5000ms.

If this is a long-running test, pass a timeout value as the last argument or configure it globally with "testTimeout".

> src/test/Profile.test.jsx:165:3

```
163| });
164|
165| it('shows error if username is taken', async () => {
    | ^
166|   api.checkUsernameAvailability.mockResolvedValue({ available: false });
167|   render(<Profile />);
```

[4/5]

FAIL src/test/Profile.test.jsx > Profile Component > handles API error during update

```
166|     api.checkUsernameAvailability.mockResolvedValue({ available: false });
167|     render(<Profile />);

[4/5]-

FAIL src/test/Profile.test.jsx > Profile Component > handles API error during update
Error: Test timed out in 5000ms.
If this is a long-running test, pass a timeout value as the last argument or configure it globally with "testTimeout".
> src/test/Profile.test.jsx:226:3
224|     // --- 6. ERROR HANDLING ---
225|
226|     it('handles API error during update', async () => {
    |     ^
227|     api.updateProfile.mockRejectedValue(new Error('Network Error'));
228|     render(<Profile />);

[5/5]-

Test Files 2 failed (2)
Tests 5 failed | 6 passed (11)
Start at 03:31:42
Duration 20.61s

FAIL Tests failed. Watching for file changes...
press h to show help, press q to quit
```

```
/* assert on the output */

This ensures that you're testing the behavior the user would see in the browser. Learn more at https://react.dev/learn/testing-components#wrap-tests-with-act

✓ src/test/AllNews.test.jsx (6 tests) 151ms
✓ src/test/Bookmarks.test.jsx (10 tests) 289ms
✓ src/test/CategoryNews.test.jsx (11 tests) 327ms

Test Files 3 passed (3)
Tests 27 passed (27)
Start at 03:13:17
Duration 1.73s (transform 459ms, setup 391ms, collect 891ms, tests 768ms, environment 1.98s, prepare 119ms)

% Coverage report from v8
-----|-----|-----|-----|-----|
File    | % Stmts | % Branch | % Funcs | % Lines | Uncovered Line #s
-----|-----|-----|-----|-----|
All files | 96.37 | 72.5 | 100 | 96.77 |
AllNews.jsx | 100 | 65.95 | 100 | 100 | 48-60,62-66,69-72,152,169
Bookmarks.jsx | 93.33 | 66.66 | 100 | 94.02 | 15,70,109-110
CategoryNews.jsx | 100 | 87.23 | 100 | 100 | 39-41,52,57,124,142
-----|-----|-----|-----|-----|

PS D:\Projects\News_Aggregator_IT314\NewsXpress\frontend>
```

✓ handles API Error when fetching bookmarks 15ms
✓ handles API Error when removing bookmark 32ms

Failed Tests 3

FAIL src/test/Bookmarks.test.jsx > Bookmarks Component > renders Loading state initially
TestingLibraryElementError: Unable to find an element with the text: /Loading bookmarks.../i. This could be because the text is broken up by multiple elements. In this case, you can provide a function for your text matcher to make your matcher more flexible.

Ignored nodes: comments, script, style

```
<body>
  <div>
    <main
      class="bg-newspaper text-zinc-900 lg:ml-64 xl:mr-80 pt-24"
    >
      <div>
        //
```

FAIL src/test/Bookmarks.test.jsx > Bookmarks Component > handles Remove Bookmark (Logged-in User)
AssertionError: expected "vi.fn()" to be called with arguments: ['user-123', 'interaction-1']

Received:

1st vi.fn() call:

```
[
  "user-123",
  - "interaction-1",
  + "art-1",
]
```

at error (controllers/authController.js:49:13)
at Object.<anonymous> (controllers/authController.early.test/sync.early.test.js:106:7)

File	% Stmts	% Branch	% Funcs	% Lines	Uncovered Line #s
All files	95.6	75.9	94.73	97.14	
controllers	85.71	57.89	100	91.3	
authController.js	85.71	57.89	100	91.3	35-36
services	97.26	80.64	93.75	97.91	
ArticleService.js	93.1	82.14	87.5	94.73	98,107-108
ProfileService.js	100	77.77	100	100	89-105,123-124
UserInteractionService.js	100	85.71	100	100	42
services/youtube-service	100	100	100	100	
youtubeService.js	100	100	100	100	

Test Suites: 3 failed, 2 passed, 5 total
Tests: 4 failed, 36 passed, 40 total
Snapshots: 0 total
Time: 1.144 s
Ran all test suites.

PS D:\Projects\News Aggregator-TP14\NewsXpress\backend>

Previous coverage :

% Coverage report from v8

File	% Stmts	% Branch	% Funcs	% Lines	Uncovered Line #s
All files	77.35	67.63	79.05	78.14	
assets	0	0	0	0	
LoginPage.css	0	0	0	0	
components	85.47	72.31	82.84	86.68	
AllNews.jsx	93.87	53.16	83.33	93.47	232,263,297
Bookmarks.jsx	93.58	66.66	100	94.52	17,79,124-125
CategoryNews.jsx	93.47	65.82	82.35	93.02	189,221,255
CategoryOnboarding.jsx	97.22	88.88	100	97.05	51
Default.png	0	0	0	0	
HelpSupport.jsx	100	95	100	100	63
LanguageSelector.jsx	56.52	100	55.55	56.52	...78,99-103,113,125-132
LoginPage.jsx	94.54	84.61	100	96.29	54,69
Navbar.jsx	50	53.96	43.47	51.66	142-236,289-290
NewsCard.jsx	100	92.3	100	100	23
PersonalizedFeed.jsx	94.44	100	80	94.44	28
Profile.jsx	72.11	72.64	71.42	73.68	...0-131,136-141,380-395
RecommendedArticles.jsx	100	100	100	100	
ReelCard.jsx	94.5	79.51	89.47	95.34	110,287-299,372
ReelView.jsx	84.28	57.4	93.75	90.56	77-78,86,105-106
SignUp.jsx	83.33	85.93	90.47	82.71	...5,111-113,157,324,349
SmartRecommendations.jsx	95.12	88.4	100	97.36	332
components/auth	77.77	50	50	77.77	
firebase.js	77.77	50	50	77.77	23-26
components/auth/controller	8.43	0	0	8.43	
authController.js	8.43	0	0	8.43	...2-148,153-164,177-184
utils	25	7.14	25	31.25	
badImageCache.js	25	7.14	25	31.25	10-30

PS D:\Projects\News_Aggregator_IT314\NewsXpress\frontend>

– Screenshots of the improvements done throughout the unit testing of backend : (through jest)

Final check : (with all the error which were corrected) (backend)

VS Code interface showing the Explorer, Search, and Terminal panels. The Explorer panel displays the project structure for News_Aggregator_IT314. The Search panel shows results for 'ArticleService.js'. The Terminal panel displays the output of the test command, including a table of coverage metrics and a summary of test results.

Terminal Output:

```
Test Suites: 5 failed, 3 passed, 8 total
Tests: 50 failed, 45 passed, 103 total
```

File	% Stmts	% Branch	% Funcs	% Lines	Uncovered Line #s
All files	87.5	85.71	100	87.19	
controllers	96.05	77.35	100	95.89	
FetchingNews.js	94.73	61.11	100	94.59	81-82
Summarizing.js	97.36	85.71	100	97.22	93
backendservices	84.5	91.58	100	84.17	
ArticleService.js	73.86	100	100	73.56	...105, 111, 137-140, 152, 164, 177, 189, 199, 214, 228
ProfileService.js	100	91.93	100	100	142-149, 191, 195-199
UserInteractionService.js	80.18	100	100	80	...142-143, 157-158, 164, 177, 206-210, 228, 248-250
backendservices/youtube-service	100	100	100	100	
youtubeController.js	100	100	100	100	
youtubeservice.js	100	100	100	100	

Terminal output showing the error message and the coverage table.

Error Message:

```
at error (controllers/authController.js:49:13)
at Object.<anonymous> (controllers/authController.early.test/sync.early.test.js:106:7)
```

File	% Stmts	% Branch	% Funcs	% Lines	Uncovered Line #s
All files	95.4	75.3	94.44	97	
controllers	85.71	57.89	100	91.3	
authController.js	85.71	57.89	100	91.3	35-36
services	97.26	80.64	93.75	97.91	
ArticleService.js	93.1	82.14	87.5	94.73	98,107-108
ProfileService.js	100	77.77	100	100	89-105,123-124
UserInteractionService.js	100	85.71	100	100	42

Test Suites: 3 failed, 1 passed, 4 total
Tests: 4 failed, 33 passed, 37 total
Snapshots: 0 total
Time: 0.969 s, estimated 1 s
Ran all test suites.
PS D:\Projects\News_Aggregator_IT314\NewsXpress\backend>

```

    at error (controllers/authController.js:49:13)
    at Object.<anonymous> (controllers/authController.early.test/sync.early.test.js:106:7)

• sync() sync method › Happy paths › should verify token and sync profile successfully

expect(jest.fn()).toHaveBeenCalledWith(...expected)

- Expected
+ Received

  "123",
  Object {
    - "name": "John Doe",
    - "picture": "url",
    + "avatar_url": "url",
    + "full_name": "John Doe",
    + "username": "John Doe",
  },

Number of calls: 1

47 | // Assert
48 | expect(admin.auth().verifyIdToken).toHaveBeenCalledWith('validToken');
> 49 | expect(findOrCreateProfileByAuthId).toHaveBeenCalledWith('123', { name: 'John Doe', picture: 'url' });
    |                                     ^
50 | expect(res.status).toHaveBeenCalledWith(200);
51 | expect(res.json).toHaveBeenCalledWith({ message: 'Synced', profile });
52 | });

    at Object.toHaveBeenCalledWith (controllers/authController.early.test/sync.early.test.js:49:43)
PASS services/ProfileService.test.js
• Console

```

```

FAIL controllers/authController.early.test/sync.early.test.js
• Console

console.error
  Firebase token verification failed: Token verification failed

18 |     decoded = await admin.auth().verifyIdToken(idToken);
19 |   } catch (err) {
> 20 |     console.error('Firebase token verification failed:', err.message);
    |           ^
21 |     return res.status(401).json({ message: 'Invalid or expired ID token' });
22 |   }
23 |

    at error (controllers/authController.js:20:15)
    at Object.<anonymous> (controllers/authController.early.test/sync.early.test.js:75:7)

console.error
  Error in authController.sync: Unexpected error

47 |     return res.status(200).json({ message: 'Synced', profile });
48 |   } catch (err) {
> 49 |     console.error('Error in authController.sync:', err.message);
    |           ^
50 |     return res.status(500).json({ message: 'Internal server error' });
51 |   }
52 | }

    at error (controllers/authController.js:49:13)
    at Object.<anonymous> (controllers/authController.early.test/sync.early.test.js:106:7)

• sync() sync method › Happy paths › should verify token and sync profile successfully

```



```

PS D:\Projects\News_Aggregator_IT314\NewsXpress\backend> npm test

> backend@1.0.0 test
> jest

FAIL controllers/authController.early.test/sync.early.test.js
  ● Console

    console.error
      Firebase token verification failed: Token verification failed

      18 |         decoded = await admin.auth().verifyIdToken(idToken);
      19 |       } catch (err) {
    > 20 |         console.error('Firebase token verification failed:', err.message);
         |                   ^
      21 |         return res.status(401).json({ message: 'Invalid or expired ID token' });
      22 |       }
      23 |

      at error (controllers/authController.js:20:15)
      at Object.<anonymous> (controllers/authController.early.test/sync.early.test.js:75:7)

    console.error
      Error in authController.sync: Unexpected error

      47 |         return res.status(200).json({ message: 'Synced', profile });
      48 |       } catch (err) {
    > 49 |         console.error('Error in authController.sync:', err.message);
         |                   ^
      50 |         return res.status(500).json({ message: 'Internal server error' });
      51 |       }
      52 |     }

      at error (controllers/authController.js:49:13)
      at Object.<anonymous> (controllers/authController.early.test/sync.early.test.js:106:7)

  ● sync() sync method › Happy paths › should verify token and sync profile successfully

```

```

      at Object.toHaveBeenCalledWith (controllers/authController.early.test/sync.early.test.js:49:43)

PASS services/ProfileService.test.js
  ● Console

    console.log
      ✓ Profile updated for ID: test-profile-id

    at log (services/ProfileService.js:96:13)

Test Suites: 1 failed, 1 passed, 2 total
Tests:       1 failed, 5 passed, 6 total
Snapshots:   0 total
Time:        0.561 s, estimated 1 s
Ran all test suites.
PS D:\Projects\News_Aggregator_IT314\NewsXpress\backend>

```

You'll find more details and examples of these config options in the docs:
<https://jestjs.io/docs/configuration>
For information about custom transformations, see:
<https://jestjs.io/docs/code-transformation>

Details:

D:\Projects\News_Aggregator_IT314\NewsXpress\backend\node_modules\uuid\dist-node\index.js:1
export { default as MAX } from './max.js';
^^^^^

SyntaxError: Unexpected token 'export'

```
8 | const crypto = require('crypto');  
9 | const { Profile } = require('../config/db');  
> 10 | const { v5: uuidv5 } = require('uuid');  
    |                        ^  
11 |  
12 | /**  
13 |  * Convert Firebase UID string to a deterministic UUID v5
```

at Runtime.createScriptFromCode (node_modules/jest-runtime/build/index.js:1318:40)
at Object.require (services/ProfileService.js:10:24)
at Object.require (services/ProfileService.test.js:2:27)

Test Suites: 2 failed, 2 total
Tests: 1 failed, 4 passed, 5 total
Snapshots: 0 total
Time: 1.016 s
Ran all test suites.
PS D:\Projects\News_Aggregator_IT314\NewsXpress\backend>

You'll find more details and examples of these config options in the docs:
<https://jestjs.io/docs/configuration>
For information about custom transformations, see:
<https://jestjs.io/docs/code-transformation>

Details:

D:\Projects\News_Aggregator_IT314\NewsXpress\backend\node_modules\uuid\dist-node\index.js:1
export { default as MAX } from './max.js';
^^^^^

SyntaxError: Unexpected token 'export'

```
6 | // Importing only the models this service needs from the central db config  
7 |  
> 8 | const { v4: uuidv4 } = require('uuid');  
    |                        ^  
9 | const { Profile } = require('../config/db');  
10 | const { v5: uuidv5 } = require('uuid');  
11 |
```

at Runtime.createScriptFromCode (node_modules/jest-runtime/build/index.js:1318:40)
at Object.require (services/ProfileService.js:8:24)
at Object.require (services/ProfileService.test.js:2:27)

Test Suites: 2 failed, 2 total
Tests: 2 failed, 3 passed, 5 total
Snapshots: 0 total
Time: 0.656 s, estimated 1 s
Ran all test suites.
PS D:\Projects\News_Aggregator_IT314\NewsXpress\backend>

FAIL services/ProfileService.test.js

- Test suite failed to run

Jest encountered an unexpected token

Jest failed to parse a file. This happens e.g. when your code or its dependencies use non-standard JavaScript syntax, or when Jest is not configured to support such syntax.

Out of the box Jest supports Babel, which will be used to transform your files into valid JS based on your Babel configuration.

By default "node_modules" folder is ignored by transformers.

Here's what you can do:

- If you are trying to use ECMAScript Modules, see <https://jestjs.io/docs/ecmascript-modules> for how to enable it.
- If you are trying to use TypeScript, see <https://jestjs.io/docs/getting-started#using-typescript>
- To have some of your "node_modules" files transformed, you can specify a custom "transformIgnorePatterns" in your config.
- If you need a custom transformation, specify a "transform" option in your config.
- If you simply want to mock your non-JS modules (e.g. binary assets) you can stub them out with the "moduleNameMapper" config option.

You'll find more details and examples of these config options in the docs:

<https://jestjs.io/docs/configuration>

For information about custom transformations, see:

<https://jestjs.io/docs/code-transformation>

Details:

```
D:\Projects\News_Aggregator_IT314\NewsXpress\backend\node_modules\uuid\dist-node\index.js:1
export { default as MAX } from './max.js';
^^^^^^
```

SyntaxError: Unexpected token 'export'

- If you simply want to mock your non-JS modules (e.g. binary assets) you can

You'll find more details and examples of these config options in the docs:

<https://jestjs.io/docs/configuration>

For information about custom transformations, see:

<https://jestjs.io/docs/code-transformation>

Details:

```
D:\Projects\News_Aggregator_IT314\NewsXpress\backend\node_modules\uuid\dist-no
export { default as MAX } from './max.js';
^^^^^^
```

SyntaxError: Unexpected token 'export'

```
6 | // Importing only the models this service needs from the central db con
7 |
> 8 | const { v4: uuidv4 } = require('uuid');
   |                        ^
9 | const { Profile } = require('../config/db');
10 | const { v5: uuidv5 } = require('uuid');
11 |
```

```
at Runtime.createScriptFromCode (node_modules/jest-runtime/build/index.js:13
at Object.require (services/ProfileService.js:8:24)
at Object.require (services/ProfileService.test.js:2:27)
```

Test Suites: 2 failed, 2 total

Tests: 1 failed, 4 passed, 5 total

Snapshots: 0 total

PROBLEMS 1 OUTPUT DEBUG CONSOLE TERMINAL PORTS GITLENS SONARQUBE 1

Expected: "123", {"full_name": "John Doe", "username": "John Doe"}
Received

```
1
  "123",
  Object {
    + "avatar_url": "url",
      "full_name": "John Doe",
      "username": "John Doe",
  },
2
  "123",
  Object {
    + "avatar_url": "url",
      "full_name": "John Doe",
      "username": "John Doe",
  },
```

Number of calls: 2

```
107 |
108 | // Assert
> 109 | expect(findOrCreateProfileByAuthId).toHaveBeenCalledWith('123', { full_name: 'John Doe', username: '
    |                                     ^
110 |     expect(res.status).toHaveBeenCalledWith(500);
111 |     expect(res.json).toHaveBeenCalledWith({ message: 'Internal server error' });
112 | });

at Object.toHaveBeenCalledWith (controllers/authController.early.test/sync.early.test.js:109:43)
```

Test Suites: 2 failed, 2 total

Tests: 2 failed, 3 passed, 5 total

Snapshots: 0 total

Time: 1.109 s, estimated 2 s

at Object.require (services/profileService.test.js:27:7)

FAIL controllers/authController.early.test/sync.early.test.js

• Console

console.error

Firestore token verification failed: Token verification failed

```
18 |     decoded = await admin.auth().verifyIdToken(idToken);
19 |   } catch (err) {
> 20 |     console.error('Firestore token verification failed:', err.message);
    |           ^
21 |     return res.status(401).json({ message: 'Invalid or expired ID token' });
22 |   }
23 |
```

at error (controllers/authController.js:20:15)

at Object.<anonymous> (controllers/authController.early.test/sync.early.test.js:75:7)

console.error

Error in authController.sync: Unexpected error

```
47 |     return res.status(200).json({ message: 'Synced', profile });
48 |   } catch (err) {
> 49 |     console.error('Error in authController.sync:', err.message);
    |           ^
50 |     return res.status(500).json({ message: 'Internal server error' });
51 |   }
52 | }
```

at error (controllers/authController.js:49:13)

at Object.<anonymous> (controllers/authController.early.test/sync.early.test.js:106:7)

• sync() sync method › Happy paths › should verify token and sync profile successfully

```
> backend@1.0.0 test
> jest
```

FAIL services/**ProfileService.test.js**

- Test suite failed to run

Jest encountered an unexpected token

Jest failed to parse a file. This happens e.g. when your code or its dependencies use non-standard JavaScript syntax, or when Jest is not configured to support such syntax.

Out of the box Jest supports Babel, which will be used to transform your files into valid JS based on your Babel configuration.

By default "node_modules" folder is ignored by transformers.

Here's what you can do:

- If you are trying to use ECMAScript Modules, see <https://jestjs.io/docs/ecmascript-modules> for how to enable it.
- If you are trying to use TypeScript, see <https://jestjs.io/docs/getting-started#using-typescript>
- To have some of your "node_modules" files transformed, you can specify a custom "transformIgnorePatterns" in your config.
- If you need a custom transformation, specify a "transform" option in your config.
- If you simply want to mock your non-JS modules (e.g. binary assets) you can stub them out with the "moduleNameMapper" config option.

You'll find more details and examples of these config options in the docs:

<https://jestjs.io/docs/configuration>

For information about custom transformations, see:

<https://jestjs.io/docs/code-transformation>

Details:

```
D:\Projects\News_Aggregator_IT314\NewsXpress\backend\node_modules\uuid\dist-node\index.js:1
export { default as MAX } from './max.js';
^^^^^^
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS GITLENS SONARQUBE

```
+   "full_name": "John Doe",
+   "username": "John Doe",
+ },
2   "123",
    Object {
-     "name": "John Doe",
-     "picture": "url",
+     "avatar_url": "url",
+     "full_name": "John Doe",
+     "username": "John Doe",
+   },
+ },
```

Number of calls: 2

```
107 |
108 |     // Assert
> 109 |     expect(findOrCreateProfileByAuthId).toHaveBeenCalledWith('123', { name: 'John Doe', picture: 'url' });
      |                                     ^
110 |     expect(res.status).toHaveBeenCalledWith(500);
111 |     expect(res.json).toHaveBeenCalledWith({ message: 'Internal server error' });
112 |   });
```

at Object.toHaveBeenCalledWith (controllers/authController.early.test/sync.early.test.js:109:43)

Test Suites: 2 failed, 2 total

Tests: 2 failed, 3 passed, 5 total

Snapshots: 0 total

Time: 1.765 s

Ran all test suites.

PS D:\Projects\News_Aggregator_IT314\NewsXpress\backend> |